U.S. INFORMATION SERVICES MARKETS,

1982 - 1987, VOLUME I

PROCESSING SERVICES AND INTEGRATED SYSTEMS

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About INPUT

INPUT provides planning information, analysis, and recommendations to managers and executives in the information processing industries. Through market research, technology forecasting, and competitive analysis, INPUT supports client management in making informed decisions. Continuing services are provided to users and vendors of computers, communications, and office products and services.

The company carries out continuous and in-depth research. Working closely with clients on important issues, INPUT's staff members analyze and interpret the research data, then develop recommendations and innovative ideas to meet clients' needs. Clients receive reports, presentations, access to data on which analyses are based, and continuous consulting.

Many of INPUT's professional staff members have nearly 20 years' experience in their areas of specialization. Most have held senior management positions in operations, marketing, or planning. This expertise enables INPUT to supply practical solutions to complex business problems.

Formed in 1974, INPUT has become a leading international planning services firm. Clients include over 100 of the world's largest and most technically advanced companies.

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Planning Services for Management

U.S. INFORMATION SERVICES MARKETS, 1982 - 1987

VOLUME I

PROCESSING SERVICES AND INTEGRATED SYSTEMS

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U.S. INFORMATION SERVICES MARKETS,

1982-1987

VOLUME I

PROCESSING SERVICES AND

INTEGRATED SYSTEMS

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U.S. INFORMATION SERVICES MARKETS,

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I INTRODUCTION

I INTRODUCTION

- This 1982 annual report on U.S. processing services and integrated systems markets is produced as part of the Information Services Industry Program, for use by clients of that program. A companion volume on software products and professional services is also available.

- The data presented are based on interviews conducted during 1982 with both users and vendors of information services. The interviews were organized into programs focusing on:

    - Overall vendor performance in each service category.

    - User expenditures and growth plans.

    - Specific industry performances that are key to information services' overall growth (banking, manufacturing).

    - High-growth markets such as software products and financial planning systems.

- For the first time, integrated systems (turnkey offerings) are included in the report. Integrated systems have become an integral part of a number of services vendors' offerings and the market for such products is growing at a rate that is second only to the software products market.

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- As always, military embedded systems and classified projects are excluded.

- The main markets addressed in this report are:

  - Processing services.

    - Remote computing services (RCS).

    - Processing facilities management (PFM).

    - Batch processing services.

  - Integrated systems (also known as turnkey systems).

    - Function specific systems.

    - Industry specific systems.

- Each of the three modes of delivery of processing services (RCS, PFM, and batch) are forecasted separately in three categories of service:

  - Function specific (i.e., cross-industry services that solve specific functional requirements, such as general ledger, payroll, financial planning, etc).

  - Industry specific (i.e., which solve requirements that are specific to an industry, such as seismic processing).

  - Utility (i.e., which provide nonspecific tools and processing power enabling users to develop their own solutions, such as raw time sales).

- The report forecasts user expenditures in each market, and updates information published in previous INPUT reports. A listing of these reports is provided in Appendix E.

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- All forecasts are expressed in current dollars.

A. SCOPE

- This report encompasses processing services and integrated systems markets in the United States only. All international markets, including Canada, are excluded.

- Markets reported are for noncaptive services and products only (i.e., excluding sole-source business such as internal company processing services).

- The industry sector markets conform to the U.S. Standard Industrial Classifications (SIC), as detailed in Appendix A.

- Data presented in the main body of the report are rounded to the nearest million dollars. This should not be interpreted as implying accuracy to that degree. In general, market forecasts are accurate to the nearest $10 million.

- Summary data are obtained by bottom-up summation of component data. This introduces a further degree of inaccuracy which is stated for each chart.

B. METHODOLOGY

- The 1981 year-end value of each of the information service markets covered by this report has been established by INPUT's ongoing analysis of:

    - End-user expenditures from INPUT's user program covering current expenditures and budget growth rates.

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- INPUT's ongoing analysis of its data base of more than 4,000 informa-tion services vendors (monitored every year), for their contribution to industry sector markets and growth.

- INPUT's directory of every information services vendor with U.S. noncaptive revenues in excess of $10 million, each of which is inter-viewed by telephone each year, for its market share and growth.

- Each year the data base is reexamined in detail and previous assumptions questioned in the light of the actual performance of the industry. 1982 was a particularly difficult year in this regard since, although two poor quarters were known at the time of the first forecast, the nation's top economists and the U.S. government were confidently predicting a recovery in the second half. When this "recovery" turned out to be a recession, the forecast had to be substantially modified.

- Essential assumptions include:

  - Inflation rate of 6% per annum from 1982 through 1987.

  - The economic outlook over the forecast period.

  - The rate of net growth of existing service markets, including yearly price increases for each service category, as shown in Exhibit I-1.

  - The rate of replacement of existing services by new products/services.

  - The rate of development of new, emerging opportunities.

- Note that all of these assumptions concern growth and not current size of each market. INPUT's values for these markets are accepted by the industry as being the most accurate estimates available.

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EXHIBIT I-1

MAJOR ASSUMPTIONS USED
IN FORECASTS

INFLATION

• Inflation rate: Average of 6% per annum, 1982–1987.

ECONOMIC OUTLOOK

• 1983: a year of transition from recession to recovery.
• 1984: recovery completed, growth resumed.
• 1985–1987: steady growth, no further recession.

PRICE INCREASES

CATEGORY	AVERAGE ANNUAL INCREASE
• Processing Services	4 %
• Professional Services	5 %
• Software Products	5.5%
• Integrated Systems	2 %

INPUT
MAP2

- The growth rates used to project the growth of each service category are provided along with the forecast so that clients may revise the forecast immediately should any sharp reversals occur.

- The assumptions on the overall economy are covered in Chapter II-B of the Executive Summary, and form the baseline for the forecasts.

C.   RECONCILIATION

- The reconciliation of the forecasts contained in this report and those provided in the 1981 annual report is discussed in detail in Appendix C.

- The principal differences between the total information industry estimates for 1982 given in this year's report versus those given in the 1981 report are:

    - The inclusion of integrated systems this year.

    - The dramatic change in the economic outlook.

- Also impacting this year's forecast is the distortion in processing facilities management created by the award of project VIABLE. This contract's revenues have been included in the forecast, but INPUT expects further contracts of this size to be awarded in the coming years. The impact of these contracts cannot be estimated, and no attempt has been made to guess at their size and year of award (i.e., they are not included in the forecast).

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II EXECUTIVE SUMMARY

A. INFORMATION SERVICES MARKET AND GROWTH

- For the 10-year period ending December 1981, the U.S. information services market grew at the compound average annual growth rate (AAGR) of 18%. Last year, INPUT's expectation for the five-year period 1981-1986 was 24%. The sharp pullback of the entire economy reduced the 1982 services performance to a growth of 16%.

- A complete reversal of this downturn is not expected in 1983, which is shaping up as a transition year from a recession economy to a recovery in 1984. As a result, total services industry growth in 1983 is expected to be 19%, still below the 24% growth experienced in 1981. In fact INPUT does not expect the industry to fully recover 1981 growth until 1985.

- Over the full five-year period to 1987, the services industry compound growth is nevertheless expected to be 24%, as shown in Exhibit II-1, sustained by integrated systems (29% AAGR) and software products (38% AAGR).

- During the next five years batch processing is expected to sustain a steady growth, averaging 9% compound growth to 1987. Specialized services will support this growth, particularly those with a telecommunications-based component.

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EXHIBIT II-1

U.S. INFORMATION SERVICES MARKET,
1982–1987
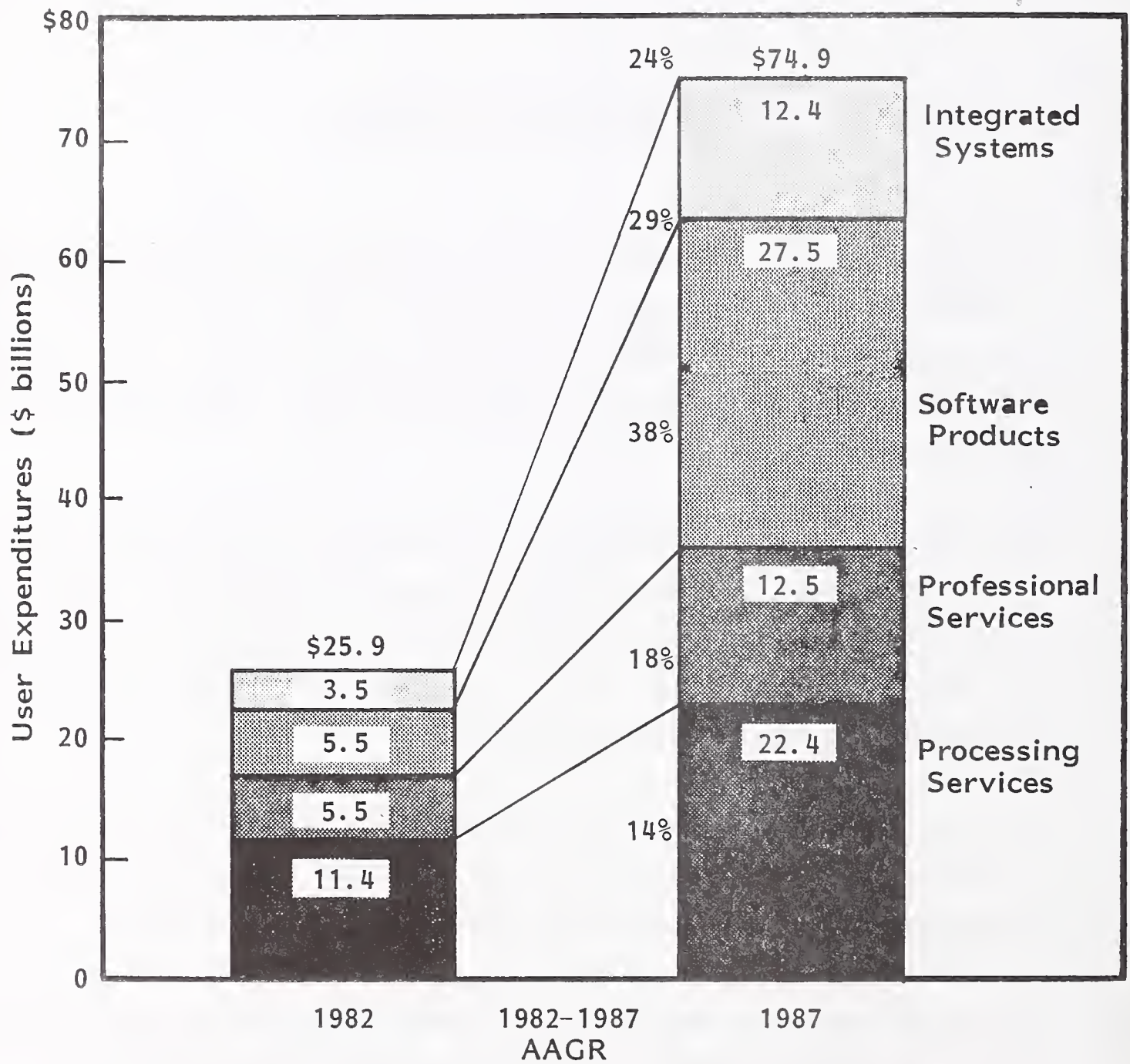
NOTE: Each market has been rounded to nearest $0.1 billion, therefore markets may not total precisely.

INPU
MAP2

- Remote computing services (RCS) are expected to slowly recover from the substantial cutbacks felt in 1982. Utility services will be the last to recover and RCS will be dominated by industry specific services from now on.

- The processing facilities management (PFM) market is also driven by industry specific services, and has been only slightly impacted by the 1982 business downturn.

- The integrated systems market is being supported by a new development: turnkey personal computer systems.

- The use of personal computers has also provided:

  - A soaring personal computer software products market, which INPUT expects will produce sales of $3.7 billion by 1987.

  - A similarly expanding integrated systems market estimated at $0.8 billion by 1987.

  - A negative impact on remote computing services, replacing small, repetitive problem-solving applications, particularly single-person small data base applications.

  - An (as yet) unexploited opportunity for RCS vendors to tie personal computer users into large external data base services.

  - A small professional services market, estimated at $25 million in 1982 growing to $250 million by 1987.

- The resultant growth expected for each service category from 1982 to 1987 is shown in Exhibit II-2.

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EXHIBIT II-2

INFORMATION SERVICES MARKET

FORECAST, 1982-1987

CATEGORY SERVICE	MARKET SIZE 1982 ($ billions)	GROWTH RATE (%) IN THE YEAR					MARKET SIZE 1987 ($ billions)
		1983	1984	1985	1986	1987	
Batch Processing Services	$ 4.2	11%	10%	10%	9%	8%	$ 6.6
Remote Computing Services	5.7	13	16	17	19	19	12.4
Processing Facilities Management	1.5	17	17	18	18	18	3.5
Systems Software	2.6	32	36	37	36	35	11.7
Applications Software	2.9	37	43	40	41	41	15.9
Professional Services	5.5	13	16	19	20	21	12.5
Integrated Systems	3.5	22	29	32	31	31	12.4
TOTAL INDUSTRY	$25.9	19%	23%	25%	26%	26%	$74.9

NOTE: Each market has been rounded to nearest $0.1 billion, therefore markets may not total precisely.

INPUT
MAP2

B.   IMPACT OF THE ECONOMY ON 1982 PERFORMANCE

- The recession and the resultant buyer hesitation cost information services vendors $1.4 billion in lost revenues in 1982 and have not finished impacting sales. INPUT estimates that lost growth of a further $0.9 billion (in 1983) and $0.4 billion (in 1984) will occur while the economy recovers. Applying forecast growth rates to these amounts yields a cumulative loss by 1987 of over $7 billion from 1981 forecasted information services revenues (which were based on an expected economic recovery in the second half of 1982). Exhibit II-3 depicts the impact of the recession.

- The impact has not been confined to sales. On the balance sheet side there has been a serious weakening of large and medium sized vendors, part of which is not yet visible.

- The larger vendors are able, by bringing forward the recognition of certain revenues and delaying the recognition of certain costs, to spread the impact of the downturn over a longer period.

- This delaying action cannot continue for very long, however, and it is likely that 1983 will see a continued worsening of large company balance sheets, even if sales improve, as hidden costs work their way through. Smaller companies, who do not have this flexibility, have already reported the full impact.

- The economic downturn has also focused management attention on personnel productivity, product competitiveness, margins, and overall company efficiency. Like other industries, the information services industry is leaner and more aggressive than only 12 months ago, and well prepared for a business upturn.

- The reexamination of company strategy in 1982 led to a number of disengagements from services that are not mainstream activities:

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EXHIBIT II-3

IMPACT OF THE RECESSION ON
INFORMATION SERVICES FORECAST,
1982-1987
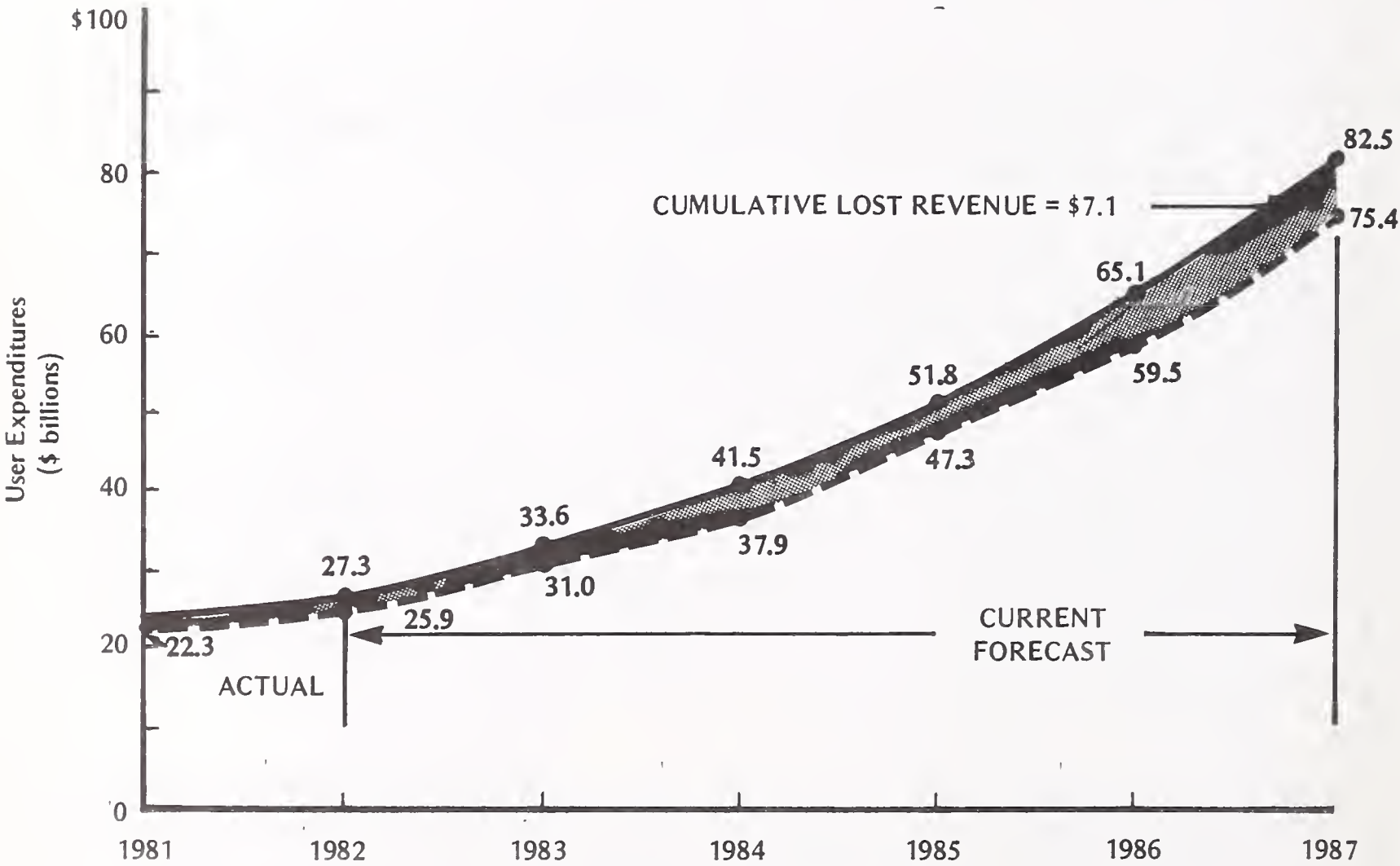
Note: Values rounded to nearest $0.1 billion.

━━━━━ = 1981 forecast, prior to development of recession.

▬ ▬ ▬ = 1982 forecast

INP
MAP2

- Tymshare sold its medical systems division to McAuto and its credit card processing to First Data Resources.

- Boeing Computer Services sold its electronic funds transfer (EFT) division to ATM Network Management.

- Automatic Data Processing (ADP) sold the tax preparation business to CCH Computax.

- Xerox sold the Arista Manufacturing software to MSA.

- In acquisition, 1982 saw as many or more as in 1981 but many acquisitions were from weakness not strength as companies with sound business prospects were squeezed by the economy.

- In summary, the recession has forced management into taking a new, hard look at company goals, products, productivity, and profitability. Hard decisions which have been put off many times before have had to be taken.

- These are all positive factors; the negative side is the accompanying weakening of balance sheets, the effects of which will remain long after the recession is over.

C.   PROCESSING SERVICES MARKET FORECAST

- The processing services market will almost double in size by 1987, from a 1982 base of $11.4 billion. The overall AAGR of 14% will be slowed by the batch processing services market which will grow at an AAGR of only 9%, as shown in Exhibit II-4.

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EXHIBIT II-4

PROCESSING SERVICES GROWTH, 1982-1987
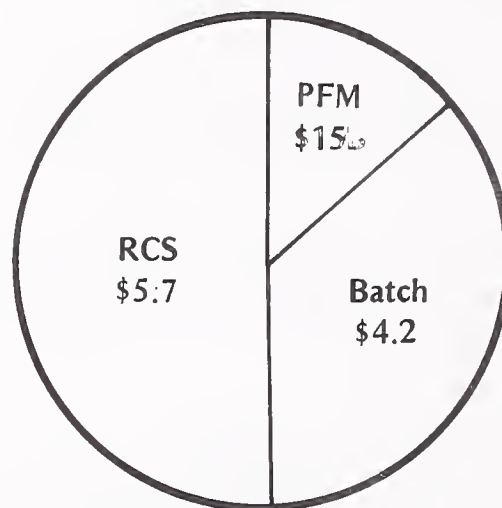
($ billions)

1982
$11.4 billion
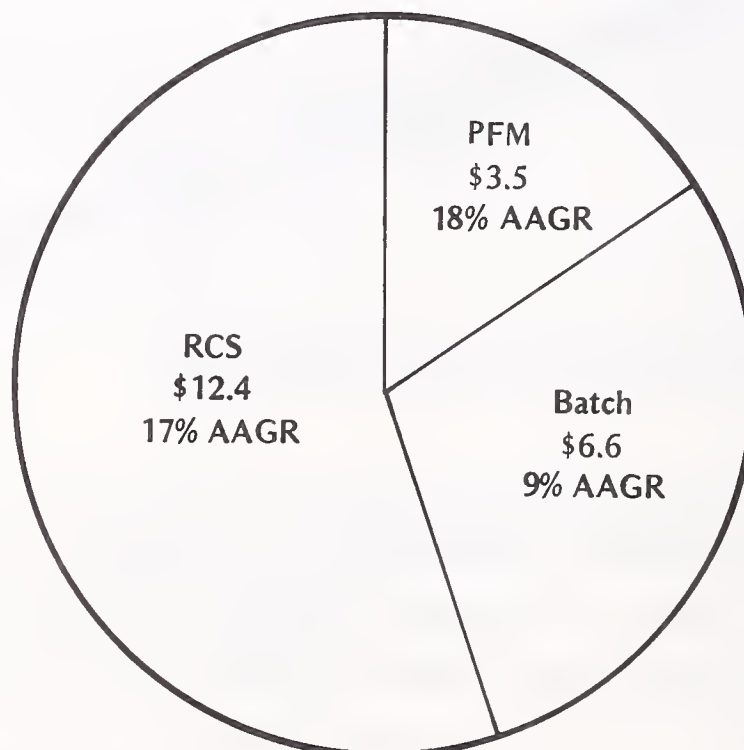
1987
$22.4 billion
14% AAGR

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MAP2

1. GROWTH OF PROCESSING SERVICES

- The principal growth area will be RCS, at 17% AAGR. This is fueled by industry specific services and data base services (which will account for half of the $12.4 billion market in 1987).

- An additional high-revenue, high-growth area in RCS is the large custom application: worldwide manufacturing control systems for individual multi-national corporations, worldwide order entry systems, worldwide cash management systems, etc.

- The AAGR of PFM services is expected to be 18%. This could turn out to be conservative, since, in addition to strong markets in the medical and banking/finance sectors, new contracts from federal government business could account for an additional $2 billion (which would boost growth to 30% per annum). The eventuality of such large contract business can only be guessed at and is not included in the forecast.

- The attractiveness of the processing facilities management business for the government sector lies partially in the significant reduction in procurement cycles (by as much as 10 years) that can be achieved when the computer hardware is owned by the services vendor.

- Batch processing is being sustained by large-volume specialist services such as mail order list processing, tax processing, seismic processing.

2. IBM'S INFORMATION NETWORK SERVICE

- IBM is a recent re-entrant to the processing services market in the U.S. after an eight-year absence, and will likely achieve $265 million of revenues by 1987, as shown in Exhibit II-5. One objective is increased sales (and faster installation) of computer equipment. Installations will be expedited by the use of the Information Network Service (INS) for programming and testing of the

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EXHIBIT II-5

IBM U.S. PROCESSING SERVICES
FORECAST RANGE, 1982-1987
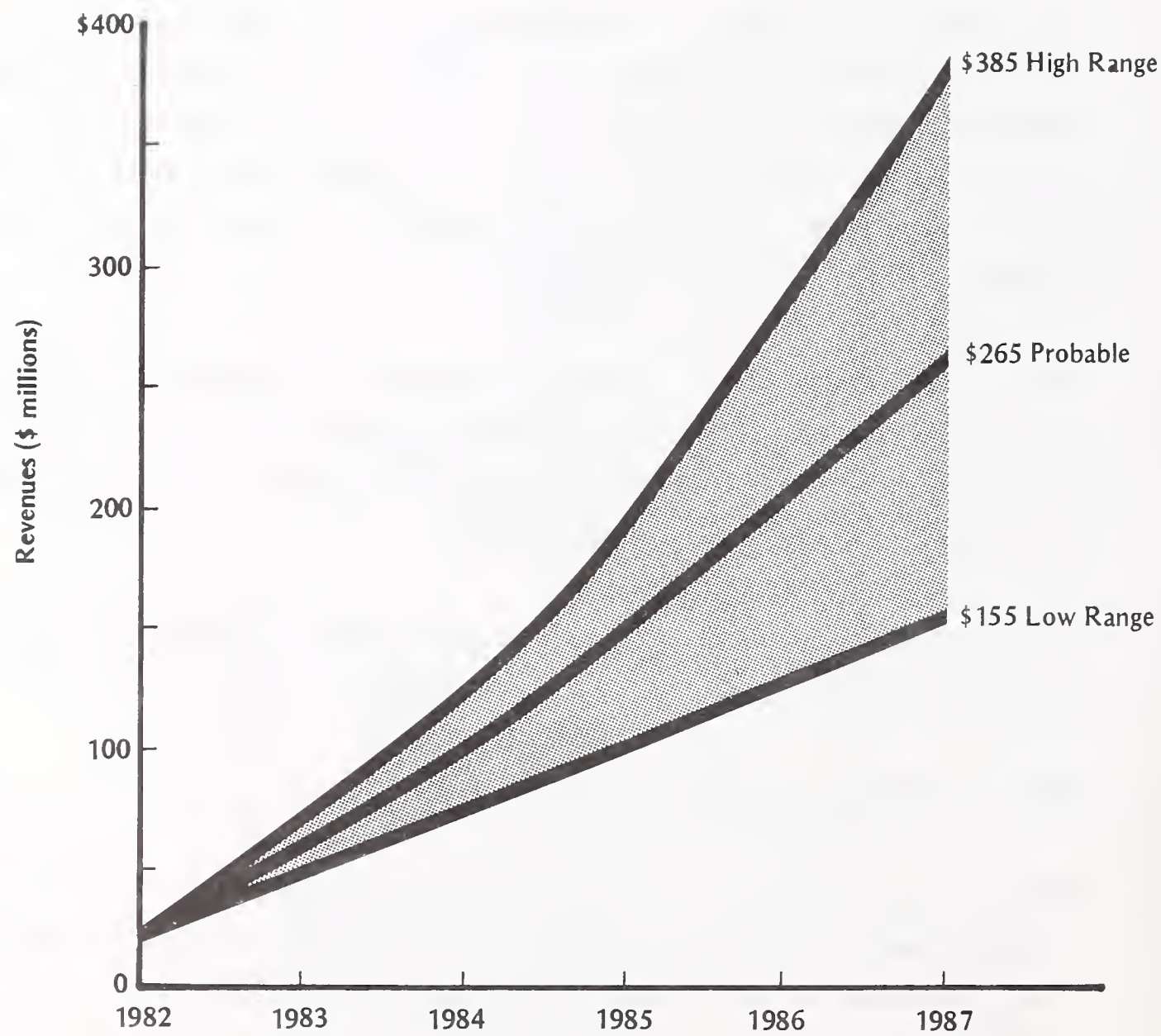
applications to be run on the ordered equipment, plus hands-on experience and training for new operating systems.

- The natural synergy of services with installed equipment will be mutually supportive of sales to both markets, and paves the way for the integration of IBM's sale of personal computers which can receive data base services and hardware/software support and maintenance over the network.

- IBM's emphasis on APL will also provide a boost to that particular market.

- A major problem for many RCS vendors has been the migration of large account business to in-house systems (and more recently of small account business to personel computers). This is no doubt viewed by IBM as a welcome development, and to be encouraged. Growth of INS will be impacted, but for IBM this is in line with the strategy: sell and install more hardware, faster.

- Another objective of INS is the market for networks represented by Value Added Network (VAN) services. This market is not included in remote computing services but could provide at least another $250 million of revenues for IBM by 1987. Particular markets that IBM can address are:

    - Intra-industry communications networks, for example banks and re-tailers.

    - Inter-industry communications networks, for example between insur-ance companies and insurance brokers.

    - Intra-company networks connecting remote users to "Information Centers," for example.

    - Network backup for disaster recovery.

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3.   PROCESSING SERVICES OPPORTUNITIES

- In order to retain current business and add new markets, further specialization of services that meet specific requirements within a given industry is necessary. Examples of developed markets in this area are cash management and personal trust systems in banking, pressure vessel design in process manufacturing, and fleet management systems in transportation.

- Cross-industry services such as tax processing and order entry are already viable businesses for those companies that have been able to establish:

    - In-house expertise of the business principles involved.

    - A company image in that area of service.

    - A critical mass of repeat business.

    - A viable competitive edge.

- Many of the smaller vertical and horizontal markets have seen the number of vendors participating in them dwindle rapidly in the last 24 months. The common trait of those vendors leaving the market is the lack of all of the characteristics listed above.

- Nevertheless there is still a reluctance on the part of some very large companies to make the commitment to develop the in-house competence necessary to:

    - Understand the business requirement fully (as opposed to simply purchasing the license to an existing product for inclusion in the library of products offered).

    - Sell the product, by demonstrating an understanding of the business to the prospect's key buyer.

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- Without a company-wide strategy and commitment to a clear set of vertical/ horizontal market goals, a vendor's processing service market share will decline.

- Preferably, a processing service aimed at a given vertical/horizontal market will be complemented by software product, integrated system, and professional services offerings to those same markets. This full line of complementary services and products needs to be expanded continuously. This year's expansion should have included:

  - Addition of personal computers.

  - Addition of briefcase computers.

  - Addition of external specialized reference data bases.

  - Addition of customized corporate data bases.

  - Expanded computer output options.

D.   INTEGRATED SYSTEMS MARKET FORECAST

- The integrated systems market was worth $3.5 billion in 1982 and grew 22% from 1981. This was a drop in excess of one-third from the 34% growth achieved between 1980 and 1981.

- Growth to 1987 is expected to be at an average yearly rate of 29% with the larger share coming from industry specialized systems. This particular sector is boosted by a rapidly developing personal computer based integrated systems market, which will reach $800 million by 1987, as shown in Exhibit II-6.

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EXHIBIT II-6

INTEGRATED SYSTEMS GROWTH, 1982-1987
($ billions)

CAD/CAM
$0.9

Other
$2.6

1982
$3.5 billion

CAD/CAM
$3.4
30% AAGR

Other
$8.5
27% AAGR

Personal
Computer
$0.8
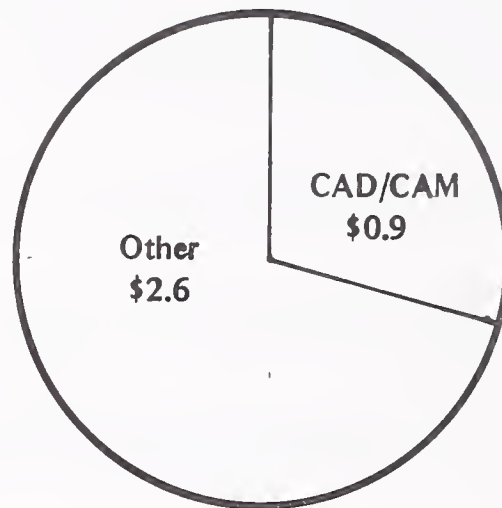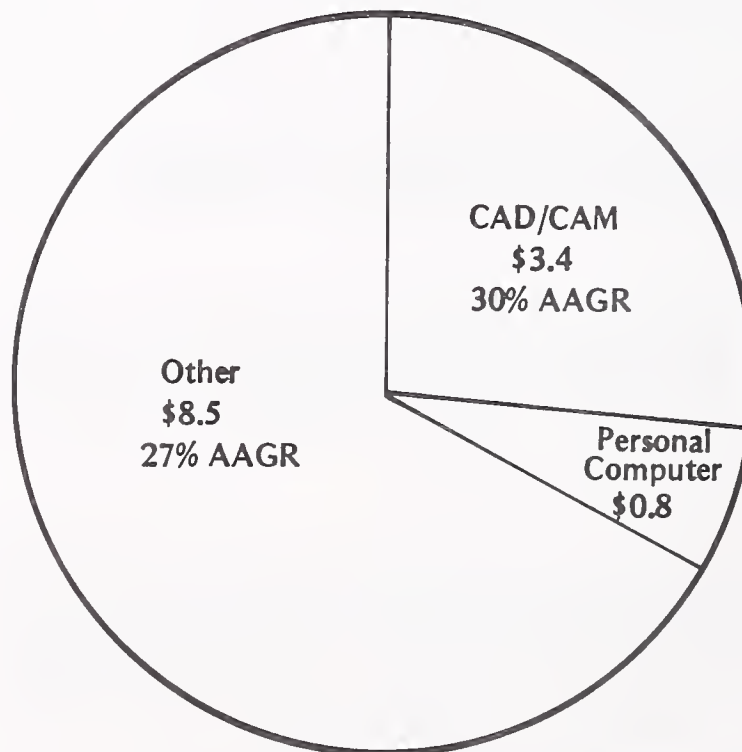
1987
$12.7 billion
29% AAGR

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MAP

- The principal markets are systems for CAD/CAM, seismic processing, bank processing, automobile dealers, hardware stores, warehousing, and medical applications.

- All of these markets have shown some resilience to the economic downturn but are currently depressed (with the exception of medical systems which have proven to be a recession-proof market). When the recovery finally arrives (currently forecast for fourth quarter 1983) the pipeline of delayed orders in all of these markets should support a rapid return to 1981 growth rates.

- Industry-specialized markets already account for two-thirds of the total integrated systems market in the U.S. The five-year forecast is for this trend to continue and for these systems to claim nearly 70% of the total market by 1987.

- Integrated systems growth is expected to moderate after a peak in 1985. By then the total market will be approaching $7.3 billion and will already be larger than two of the three processing services markets, namely batch and PFM, and will be rapidly gaining on the third, RCS.

- The new challenges to integrated systems vendors are:

  - Microcomputer- and personal-computer-based systems offered by hundreds of small start-up companies, many of which are populated by industry specialists in very narrow market segments (e.g., law office partners, doctors, tax specialists).

  - Hardware manufacturers that are beginning to integrate industry specific applications packages with their hardware in direct competition with some of their OEMs (e.g., Prime Computers).

  - RCS vendors who recognize that they must compete in this market or lose business.

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E. IMPORTANCE OF MARKETING AND PLANNING

- One of the significant developments in the information services market over the last few years has been the increased attention paid to marketing and planning (product definition, market definition, market planning, competition, user requirements, pricing) and company strategy (definition of company's role in the business community).

- This has enabled vendors to identify new product/service opportunities and adjust existing products and services to a rapidly maturing information services market. It has also enabled vendors to establish long-term goals in an environment of constant technology change.

- The recession has served to:

    - Eliminate weak competitors.

    - Focus management attention on productivity, competitive posture, and a marketing approach to business.

    - Question company goals, products, and markets.

- Simultaneously, the continued march of technology has opened up new opportunities and created new competitive challenges, new products, and new vendors. (It is unheard of that $20 million software companies should appear virtually overnight, yet it has happened several times recently.)

- Marketing and planning enable companies to avoid problem areas and take advantage of opportunities in new and existing markets.

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F.   VENDOR STRATEGIES FOR SURVIVAL

- It is axiomatic that without profit a company cannot survive long. For many information services vendors, survival is the number one priority right now as revenues and profit margins decline in the face of steadily rising costs. Guessing on the long-awaited economic recovery is not a strategy.

- In the integrated systems market the economic downturn could not have come at a worse time:

    - At the high end, the change from 16-bit to 32-bit minicomputers is underway and cannot be ignored; this means added costs as products are repackaged.

    - At the low end, markets are being redefined by the arrival of the personal computer, which also requires new marketing, distribution, and support techniques.

- The preferred strategy here is to more closely define products, markets, and user requirements; in this way the vendor's competitive posture is strengthened and sales productivity improved. In addition, an in-house RCS service for prospects who cannot yet commit to their own system will develop a backlog of future users while generating revenue.

- In the batch services market, in view of the impending peak in market size, the strategies are:

    - For smaller vendors - concentrate on very narrow, vertical markets where competition is less pronounced.

    - For larger vendors - expand the user base through aggressive acquisition of compatible businesses, exploiting economies of scale.

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- In the RCS market, whether products are aimed at function specific or industry specific markets, the aim should be to:

  - Sharpen market focus.

  - Establish alternative delivery modes (particularly integrated systems that have the option of accessing the host RCS service).

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III REMOTE COMPUTING SERVICES MARKET

III   REMOTE COMPUTING SERVICES MARKET

A.   USER EXPENDITURES BY INDUSTRY SECTOR

- The remote computing services market, like all processing services markets, was severely impacted by the recession, but in a way that serves to underline the dominant trends in user requirements. The total market grew 11% in 1982 versus 17% in 1981, and will grow an average of 18% per annum from 1982 to 1987, as shown in Exhibit III-1.

- The most recession proof of the three categories of RCS in 1982 was the industry specific group of services, i.e., those vertical market services which require specialized industry knowledge and products. This market grew 14% in 1982 versus 17% in 1981, and is expected to provide the bulk of RCS growth through 1987.

- Worst hit was the utility category, the growth rate of which dropped to 5% in 1982 from 14% in 1981. Removing inflation, this market stood still, and recovery will be slow. INPUT does not expect the 1981 growth to be seen again before 1985.

- The largest industry sector user of RCS is banking and finance which was worth $1.1 billion of RCS revenue in 1982 (it is 53% larger than the next biggest sector). Banking and finance will also provide the largest incremental growth, as shown in Exhibit III-2. In 1982 it grew 16%, the highest rate of any

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EXHIBIT III-1

U.S. REMOTE COMPUTING SERVICES MARKET,
1982-1987
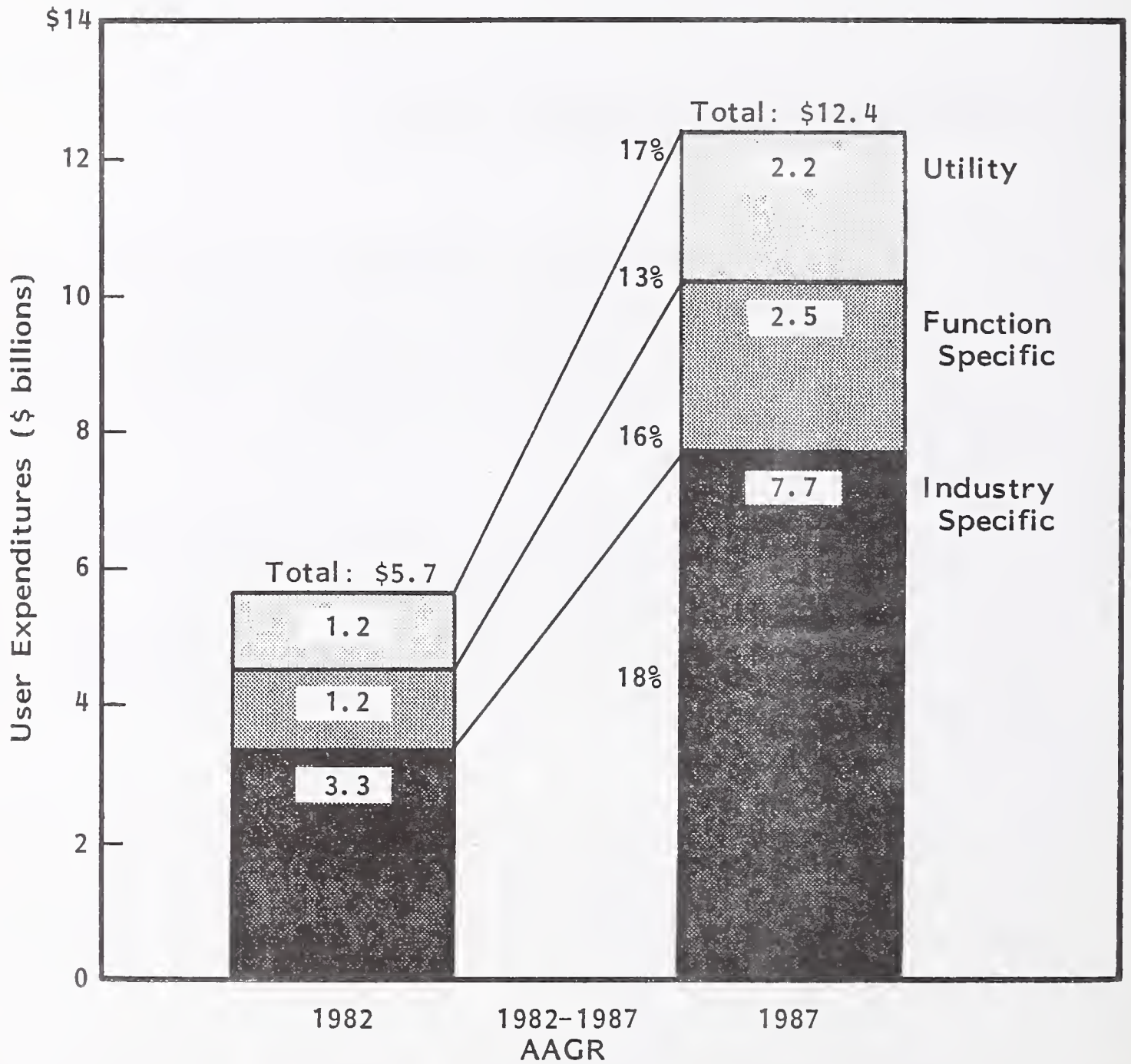
NOTE: Each market has been rounded to nearest $0.1 billion, therefore markets may not total precisely.

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EXHIBIT III-2

REMOTE COMPUTING SERVICES MARKET FORECAST BY
INDUSTRY SECTOR, 1982-1987

INDUSTRY SECTOR	AAGR 1982-1987 (percent)	USER EXPENDITURES IN CURRENT DOLLARS ($ millions)
Discrete Manufacturing	17%	746 — 1,624
Process Manufacturing	19	485 — 1,173
Transportation	16	129 — 275
Utilities	14	332 — 642
Banking and Finance	20	1,141 — 2,860
Insurance	15	238 — 484
Medical	20	249 — 619
Education	7	59 — 83
Retail	16	487 — 1,020
Wholesale	13	228 — 416
Federal Government	12	462 — 801
State and Local Government	11	81 — 136
Services	16	664 — 1,414
Other	16	382 — 811

0   500   1,000   1,500   2,000   2,500 $3,000

Total Expenditures		
1982		$ 5,683 million
1987		$12,358 million

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MAP2

sector. This was down from 22% in 1981, but this is a strong performance compared with the rest of the market.

- The only other market to sustain near normal growth was the medical sector, but this generated only $249 million of RCS revenue in 1982.

- The lowest growth sector in 1982 was education which "grew" only 2% (in effect contracted 4% in real terms). This is anticipated to continue throughout the forecast period.

- Over the next five years INPUT expects most sector markets' growth rates to recover, but the expectations of 1981 have been cut back. The key markets, in order of importance, are:

    - Banking and finance, nearly 90% of which will be captured by industry specific services such as:

        . Stock quotation.

        . Personal trust.

        . Electronic funds transfer (EFT) network.

        . S&L planning.

        . Foreign exchange.

        . Integrated retail banking.

    - Discrete manufacturing, nearly two-thirds of which will be captured by industry specific services including:

        . Circuit design/structural design.

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- Materials requirements planning.

- Numerical control.

- CAE related applications.

- Large scale engineering simulations.

- Order entry/distribution systems.

- Services, including:

  - General business.

  - Audit services.

  - Tax processing (steady growth area).

  - Legal services.

- Two further markets of almost equal size and growth are process manufacturing (particularly the energy industry applications, gradually being converted from batch to on-line services), and retail distribution (particularly credit checking services and order processing).

- These sectors jointly accounted for 62% of the total RCS market in 1982 and are expected to increase their share to 65% by 1987.

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B.   REMOTE COMPUTING SERVICES BY TYPE

I.   FUNCTION SPECIFIC SERVICES

- The principal markets for function specific RCS are discrete and process manufacturing, as shown in Exhibit III-3. These include common applications such as inventory control, accounting, assets control, human resources, and scientific and engineering applications.

- Across the board, financial planning has been and will continue to be a rapidly growing market for RCS vendors. Already worth $384 million in 1982 it will grow at a 26% AAGR to 1987, when the total market will be worth $1,228 million.

- The importance of modeling and forecasting techniques in financial planning services are examined in Exhibit III-4, by size of company. Overall ratings given were in favor of "what-if" analyses, a key requirement in such an uncertain economy.

- Cash management, return on investment, cash flow forecasting, and other financial planning tools are in demand and will increasingly be used by smaller companies in their most basic form. The larger companies have an increasingly large set of options to handle their requirements, all of which compete for established RCS business:

    - Sophisticated, tailored in-house systems (custom-built).

    - Applications packages that can be purchased "off-the shelf."

    - Services offered by banks as an intergral part of account management.

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EXHIBIT III-3
REMOTE COMPUTING SERVICES - FUNCTION SPECIFIC
MARKET FORECAST BY INDUSTRY SECTOR, 1982-1987

INDUSTRY SECTOR	AAGR 1982-1987 (percent)	USER EXPENDITURES IN CURRENT DOLLARS ($ millions)	
Discrete Manufacturing	16%	165	352
Process Manufacturing	20	171	426
Transportation	13	29	52
Utilities	14	91	175
Banking and Finance	16	97	202
Insurance	17	99	215
Medical	19	23	55
Education	9	23	35
Retail	19	51	125
Wholesale	11	70	119
Federal Government	12	129	228
State and Local Government	15	28	57
Services	14	161	311
Other	14	56	110

0   100   200   300   400 $500
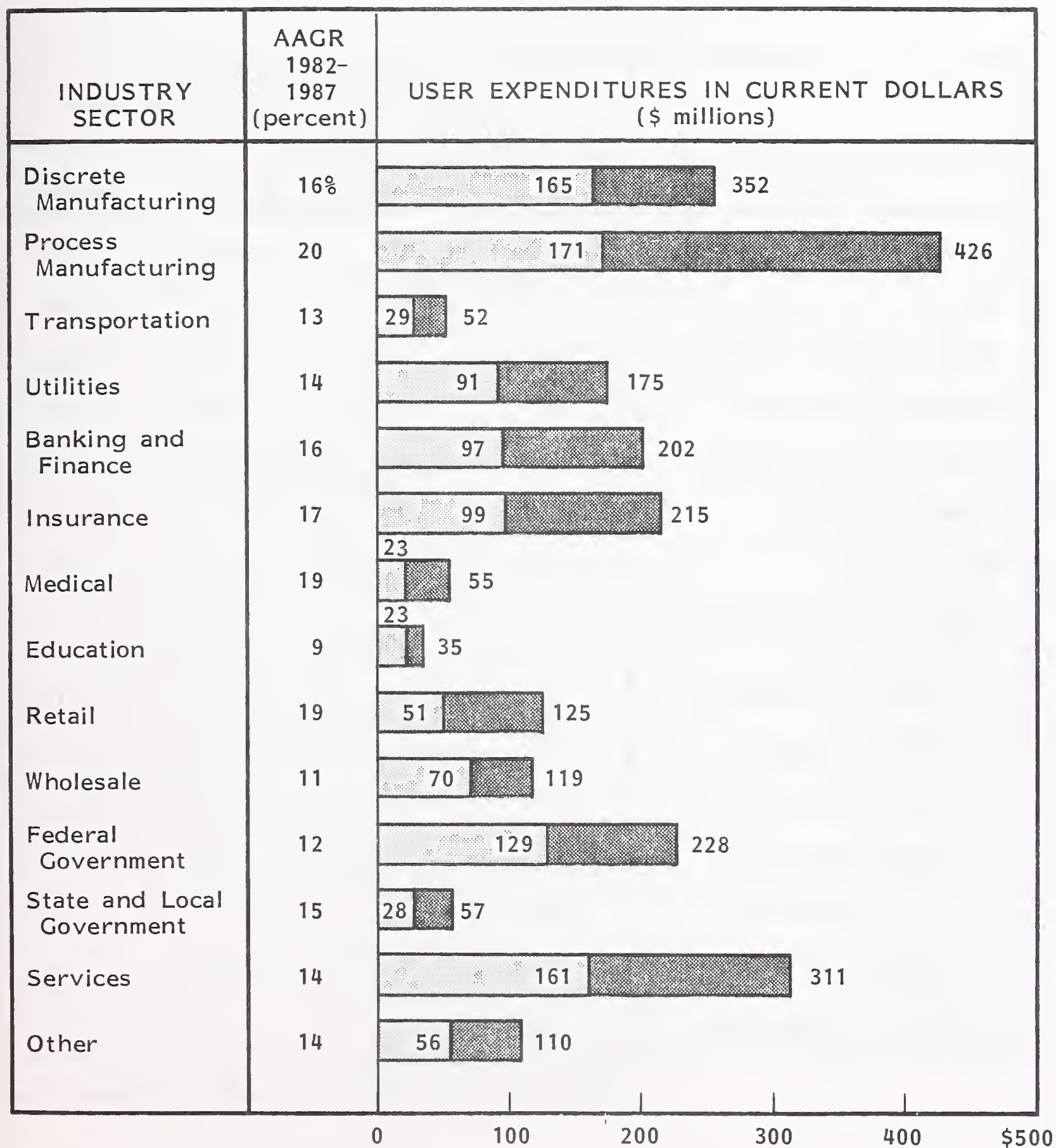
Total Expenditures

1982		$1,193 million
1987		$2,462 million

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INPUT
MAP2

EXHIBIT III-4

IMPORTANCE OF MODELING/FORECASTING TECHNIQUES AS PART OF FINANCIAL PLANNING SERVICES

MODELING/FORECASTING TECHNIQUE	IMPORTANCE FACTOR (1 = Unimportant; 5 = Most Important) COMPANY RESPONDENTS			
	FORTUNE 500/50	FORTUNE 1,000/100	OTHER	ALL
"What if" Analysis	4.6	4.5	4.4	4.5
Return on Investment	4.0	3.5	3.9	3.9
Discounted Cash Flow	4.1	3.4	3.8	3.8
Sensitivity Analysis	3.9	3.7	3.6	3.8
Financial Ratio Analysis	3.6	3.3	3.3	3.5
Linear Regression	3.6	3.2	2.6	3.2
Risk Analysis	3.3	2.7	2.9	3.1
Ability to Handle Simultaneous Equations	3.4	2.9	2.9	3.1
Time Series Forecasting	3.1	3.3	2.8	3.1
Significance Testing	2.7	3.0	2.8	2.8
Multiple Regression	3.0	3.0	2.3	2.8
Zero-Based Budgeting	2.4	2.6	2.5	2.5
Equation Reordering	2.6	2.6	2.3	2.8
Box-Jenkins Analysis	2.2	2.1	1.6	2.0
Number of Respondents	61	22	37	120

SOURCE: Opportunities in Financial Planning Systems Markets (INPUT)

INP
XFP

- A new set of applications which are office related is emerging, particularly electronic mail. Tymshare, Comshare, ADP, GEISCO, and Control Data Corporation (CDC) have products in this area.

2.   INDUSTRY SPECIFIC SERVICES

- In this category of RCS services, the banking and finance sector is more than twice as large as the next nearest sector and is expected to extend this advantage through 1987. Growth is anticipated to be at 21% AAGR and the 1987 market value in excess of $2.5 billion, as shown in Exhibit III-5.

- A large number of cash related and retail banking services provide this growth in the banking market:

    - Foreign exchange.

    - Correspondent banking.

    - Cash management.

    - Mortgage servicing.

    - EFT.

    - Automatic teller machine networks.

    - Trust services.

- In the finance market the principal growth areas are stock transactions, stock quotation, and brokerage services.

- The second largest market is discrete manufacturing where specialized engineering applications form a solid growth base. Some RCS vendors have the

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INPUT

EXHIBIT III-5

REMOTE COMPUTING SERVICES - INDUSTRY SPECIFIC
MARKET FORECAST BY INDUSTRY SECTOR, 1982-1987

INDUSTRY SECTOR	AAGR 1982- 1987 (percent)	USER EXPENDITURES IN CURRENT DOLLARS ($ millions)
Discrete Manufacturing	17%	475 — 1,042
Process Manufacturing	23	67 — 193
Transportation	20	73 — 182
Utilities	16	119 — 252
Banking and Finance	21	985 — 2,540
Insurance	15	115 — 228
Medical	20	216 — 544
Education	8	11 — 16
Retail	16	395 — 822
Wholesale	14	131 — 258
Federal Government	15	41 — 82
State and Local Government	12	15 — 26
Services	18	429 — 972
Other	18	247 — 574

0   500   1,000   1,500   2,000   2,500 $3,000

Total Expenditures

1982	$3,319 million
1987	$7,731 million

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opportunity to develop distributed CAD/CAM networks that offer the integration link for existing CAD/CAM systems. Many multidivisional, multisubsidiary corporations are seeking to standardize CAD/CAM methodology and technology and to pool the expensive manpower resources employed.

- One obvious vendor that might benefit most from this approach is General Electric with the availability of:

    - GEISCO's network.

    - In-house strategy of extensive CAD/CAM use.

    - Enormous and diverse discrete manufacturing operations.

    - Captive CAD/CAM subsidiary (Calma).

3. UTILITY SERVICES

- The utility services category is a large market in absolute terms ($1.2 billion in 1982) even though it is not growing very rapidly (13% AAGR), as shown in Exhibit III-6.

- The principal markets are process manufacturing and federal government both of which have significant development activities that use "raw time," and develop customized programs to run on an outside RCS vendor's system. Custom engineering applications are also part of this market.

- Similarly in the utilities sector, the public utility companies that develop customized planning models to run on an RCS system are counted in this category of services.

- There will be a continued need for this kind of service in the future, but the market is less attractive for a number of obvious reasons:

INPUT

EXHIBIT III-6

REMOTE COMPUTING SERVICES - UTILITY

MARKET FORECAST BY INDUSTRY SECTOR, 1982-1987

INDUSTRY SECTOR	AAGR 1982-1987 (percent)	USER EXPENDITURES IN CURRENT DOLLARS ($ millions)
Discrete Manufacturing	17%	106 ▪▪▪ 230
Process Manufacturing	18	247 ▪▪▪ 554
Transportation	9	27 / 41
Utilities	12	122 ▪▪▪ 215
Banking and Finance	15	59 ▪▪▪ 118
Insurance	11	24 / 41
Medical	15	10 / 20
Education	5	25 / 32
Retail	12	41 ▪▪▪ 73
Wholesale	7	27 / 39
Federal Government	11	292 ▪▪▪ 491
State and Local Government	7	38 / 53
Services	12	74 ▪▪▪ 131
Other	10	79 ▪▪▪ 127

0   100   200   300   400   500 $600
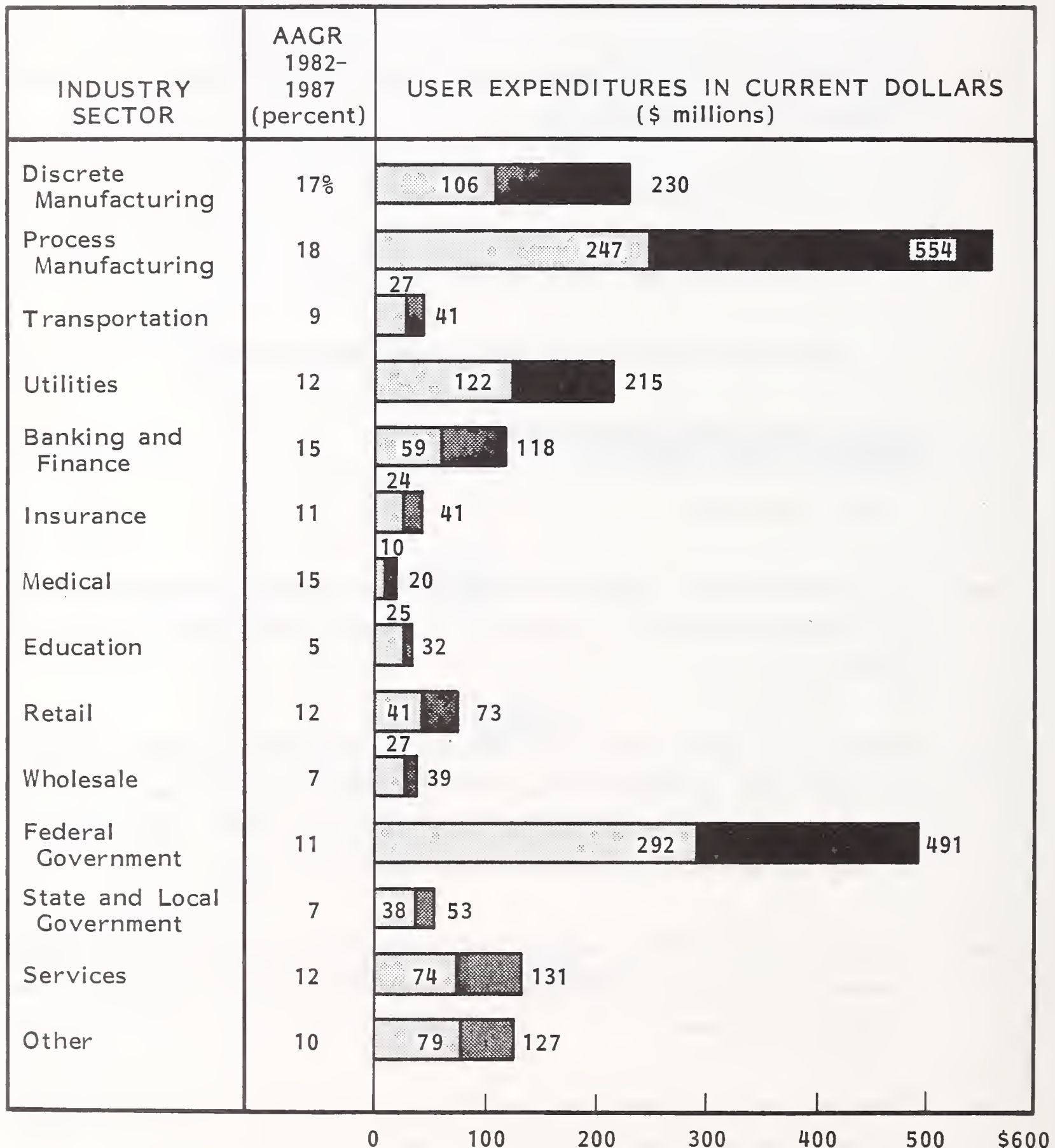
Total Expenditures

1982		$1,171 million
1987		$2,165 million

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INPU
MAP2

- It is relatively easy for users to switch vendors or put their applications up on an in-house system.

- Demand drops in hard economic times.

- Whenever an interesting market develops, a standard service will be developed by the competition.

• Therefore utility services demand continuous selling and support, while competitors are regularly attacking the customer base. This is not the kind of service that can form the basis of a growth company. However, if the service is not the final product, but a means of achieving some other goal, then it may make eminent sense. This is the case of IBM's Information Network Service (INS) which is primarily utility processing, the goal of which is to assist and speed the installation of IBM computers.

• Utility services that will grow rapidly are large customized application networks which support worldwide cash management or order entry. Network applications will be a very important segment of this market. Large vendors such as GTE, IBM, and American Bell will be major factors in the market as will GEISCO and potentially Tymshare and BCS. To be successful, a high professional services content will be required; then companies such as CSC and PRC could have an edge in certain markets, particularly government.

C.   DATA BASE SERVICES

• Data base services offer a sound basis for market penetration and repeat business development. The main category of growth opportunities is the shared dynamic data bases (i.e., data bases that have a broad range of prospects in a range of industry sectors, and that change content rapidly).

INPUT

- Data base services may be either function specific or industry specific.

- The more commonly known instances of this type of service are the econometric, demographic, and securities/commodities data bases. More recently the classic trend to market specialization has developed with specific data bases for, for example, legal/accounting, real estate, resources, chemical properties, engineering, etc.

- The best markets are those that fill mandatory requirements (e.g., stock quotation services for brokers). These are not necessarily the best opportunities, however, since these markets are already served by well entrenched vendors (e.g., Quotron). Other examples include credit check services (Telecredit, TRW) and real estate (PRC).

- Less interesting (developed) markets, but currently the best opportunities are the text search-related data bases, which offer keyword or case search (e.g., legal, Justice Department, insurance). Text manipulation and word search/case search is a widely applicable capability.

- The more commonly available financial and economic data bases (time series of primarily historical data on industrial and financial performances) offer only isolated opportunities for new entrants and moderate growth for existing vendors of those services.

- Consumer related data bases (location, classification, credit worthiness, income, political characteristics) are rapidly developing into the prime growth areas of the decade, both in simple form (mailing lists) and complex form (cross-referencing).

- Data bases serving demand for news are similarly explosive growth areas (e.g., Dow-Jones - 167% growth in customers in 1982; the Source - 55% growth in customers; Prestel - 60% growth in customers).

INP

D. COMPETITIVE ANALYSIS

- In terms of noncaptive calendarized revenues obtained in 1981 (last complete year), Exhibit III-7 details the market share of the major RCS vendors. (These revenues are not fiscal year values since the disparity in corporate years would distort results.)

- CDC, the market leader, has a very diverse group of RCS services. In addition to CYBERNET (scientific and engineering application services), and Ticketron (sports and entertainment reservations), the newly organized Network Information Services division includes:

  - Business information services (financial modeling and planning, industry specialized services, and data bases).

  - Brokerage Transaction Services (front/back office brokerage and electronic securities market services).

  - Financial Information Services (credit union, banking, payment authorization, and loan accounting/collection services).

- GEISCO has regularly exceeded 20% growth rates since 1977 and has successfully established data base services to commerce, federal agencies, industry, and the securities/currency markets. Specialized RCS services are offered to the engineering, utilities, construction, and communications sectors, as well as financial planning tools to the business community.

- INPUT expects GEISCO to grow at 20% AAGR through 1987, i.e., well in excess of the industry average, and to gain market share steadily. However, growth in 1983 is likely to be limited to 15%.

- Tymshare has been going through a difficult period of sharply reduced income on slowing revenue growth. In 1982 Tymshare is expected to have a 4%

INPUT

EXHIBIT III-7

REMOTE COMPUTING SERVICES
VENDOR MARKET SHARE, 1981

RANK	VENDOR	REVENUES IN CALEN- DAR 1981 ($ millions)	MARKET SHARE (percent)
1	Control Data Corporation	$361	7.1%
2	General Electric Information Services Company (GEISCO)	250	4.9
3	Automatic Data Processing	223	4.4
4	Tymshare Inc.	120	2.4
5	Equifax Inc.	97	1.9
6	United Information Systems	96	1.9
7	Dun and Bradstreet	95	1.9
8	Chase Manhattan Bank	91	1.8
9	National Data Corporation	87	1.7
10	Boeing Computer Services Inc.	87	1.7

INP
MAP2

increase in revenue and net income that is 60% below 1981. The restructuring of the company continues with divestitures of operations in areas that Tymshare no longer wishes to pursue (e.g., credit card processing) and acquisitions that reinforce strategic goals (e.g., Multi-point Communications Corporation, and Travel Systems Inc.).

- Equifax has been increasing its risk management, financial control, and general business services at a slow 8% to 9% (which slowed even further to 7% in the first nine months of 1982). The business is solid and profitable, but the company is expected to steadily lose share as the RCS market expands faster than Equifax.

- United Information Systems is yet another company having a very difficult time. In the first three quarters of 1982 revenues fell 7% (and the third quarter was down 12%). UIS also showed a loss on the last quarter. INPUT expects UIS to recover in late 1983.

- National Data Corporation has been growing at a steady 16% over the last five years, improving to 19% in 1981. In 1982 this jumped to 25% (only part of which was due to the Rapidata acquisition). INPUT expects NDC to gain market share through 1987.

E.   KEY MARKET TRENDS

- The overall picture for remote computing services appears to be a gloomy one for the immediate future. The main reasons are:

    - Short-term revenue growth will be very weak for the majority of vendors; many will see a contraction of business and net income.

    - Recovery will be slow in coming, probably not before 1984, certainly not before first quarter 1983.

INPUT

- The shift of large account business to in-house processing will continue, and small, single application needs will be siphoned off by personal computers.

- The need to target industry-specialized markets means substantial increases in fixed costs in the form of industry specialists/consultants; these costs cannot be avoided if these growth markets are to be addressed.

- Exhibit III-8 details the analysis of the first nine months of 1982 results for selected RCS vendors. Overall revenues grew over 16% while pretax income grew only slightly more than 12%. This masks the downturn in the third and fourth quarters, however, which affected most of the vendors listed (exceptions were Quotron, SEI, and Shared Medical). INPUT expects RCS industry full-year 1982 results to be:

  - Revenues up 11%.

  - Pretax income up 7% over 1981.

- More than ever, the need is to focus on opportunity by clearly and narrowly defining the goals of the company and pursuing the markets so defined with a set of integrated products, services, and delivery modes. This approach should include transferable applications software (from mainframe to micros, as with MSA, and from RCS host to in-house system) as well as integrated systems and professional services complements.

INPI

EXHIBIT III-8

COMPARISON OF FIRST NINE MONTHS RESULTS, 1981/1982,
RCS VENDORS

COMPANY	REVENUE Q1-Q3 ($ millions)		PERCENT CHANGE	PRETAX INCOME Q1-Q3 ($ thousands)		PERCENT CHANGE
	1981	1982		1981	1982	
ADP	$449.6	522.0	16 %	$72,281	$81,401	13 %
Tymshare	218.9	231.7	6	27,471	17,795	(35)
Quotron	63.2	88.5	40	16,158	20,142	25
SEI Corporation	23.9	28.7	20	3,337	4,580	37
Shared Medical Systems	95.7	119.5	25	24,104	29,793	24
Comdata Network	14.7	19.1	30	3,007	4,009	33
Cycare Systems	14.6	16.9	16	1,024	988	(4)
Dyatron	30.5	25.5	(16)	(1,812)	(910)	50
Weighted Average	–	–	16.4%	–	–	12.1%

INPUT
MAP2

IV PROCESSING FACILITIES MANAGEMENT

IV PROCESSING FACILITIES MANAGEMENT

A.   USER EXPENDITURES BY INDUSTRY SECTOR

- Processing facilities management is the smallest of the services market categories analyzed by INPUT but is characterized by large, multi-year contracts with good margins.

- The market is dominated by industry specific PFM contracts to the point where it is easy to overlook the other categories. This would be a mistake, however, since contracts such as project VIABLE, the largest services contract ever awarded, are part of the utility PFM market.

- Overall PFM growth through 1987 is expected to be almost constant at 18% as a result of the long-term contract nature of the business, as shown in Exhibit IV-1. This is well below the Information Services market average of 24%. However, it could be much greater than this as a result of further very large government contracts.

- The principal industry sector market is banking and finance.

    - The largest PFM vendors are active in this market - Electronic Data Systems (EDS), SEI, CSC, Sun, First Data Resources (FDR), Systematics - which is expected to provide nearly 40% of the incremental growth from 1982 to 1987.

INPUT

EXHIBIT IV-1

U.S. PROCESSING FACILITIES MANAGEMENT MARKET,
1982-1987
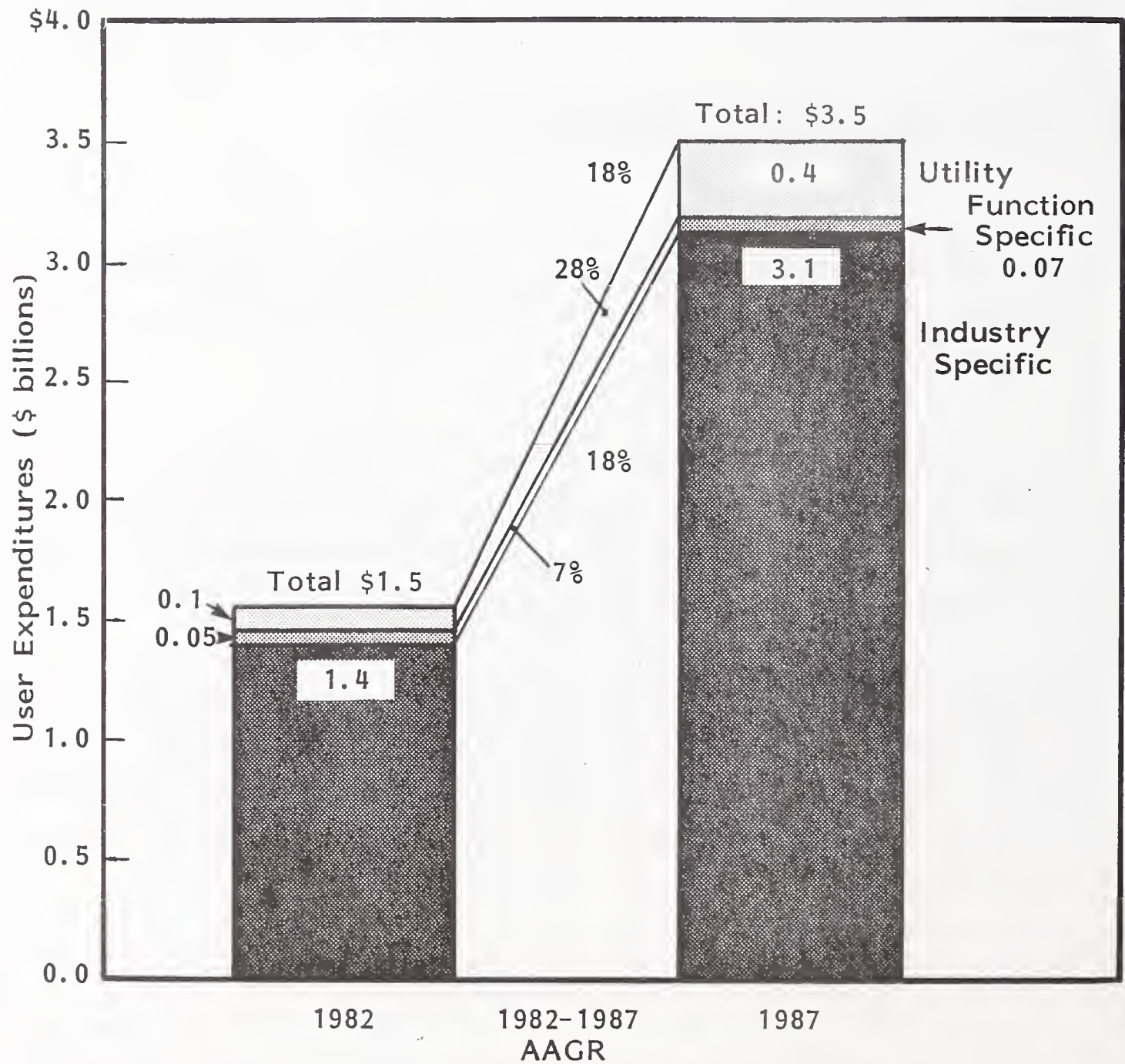
NOTE: Each market has been rounded to nearest $0.1 billion, therefore markets may not total precisely.

INPU
MAP2

- The recent deregulation moves affecting the banking industry's and savings and loans' abilities to offer savings accounts free from government imposed interest rate ceilings are regarded by the chief economist of the Bank of America as "the most significant change in financial markets in half a century"; the surge in deposit and savings account handling is expected to provide good PFM opportunities.

- The second largest sector market is medical, and again the larger PFM vendors are active (Shared Medical Systems, McAuto). This sector is almost recession proof and is expected to grow much faster (22% per annum) than the market as a whole (18%).

- Only two other markets are of significance:

  - Insurance (EDS, CSC, ARC Automation, Cybertek).

  - Federal government (EDS, Informatics, CSC).

- Exhibit IV-2 provides the detailed analysis of the growth of each sector from 1982 to 1987.

B.   PROCESSING FACILITIES MANAGEMENT BY TYPE

- Exhibits IV-3 through IV-5 provide the industry sector analysis of PFM by function specific, industry specific, and utility services respectively.

- Function specific PFM is predominantly scientific and engineering and general administration business for the federal government.

- Industry specific PFM is concentrated in three industry sectors (banking and finance, insurance, and medical).

INPUT

EXHIBIT IV-2

PROCESSING FACILITIES MANAGEMENT

MARKET FORECAST BY INDUSTRY SECTOR, 1982-1987

INDUSTRY SECTOR	AAGR 1982-1987 (percent)	USER EXPENDITURES IN CURRENT DOLLARS ($ millions)
Discrete Manufacturing	17%	59 / 128
Process Manufacturing	17	42 / 92
Transportation	11	29 / 49
Utilities	8	12 / 18
Banking and Finance	18	615 / 1,392
Insurance	16	303 / 629
Medical	22	256 / 685
Education	14	19 / 38
Retail	6	13 / 18
Wholesale	11	38 / 63
Federal Government	24	104 / 303
State and Local Government	11	30 / 50
Services	11	4 / 7
Other	10	13 / 22

0   250   500   750   1,000   1,500 $2,000
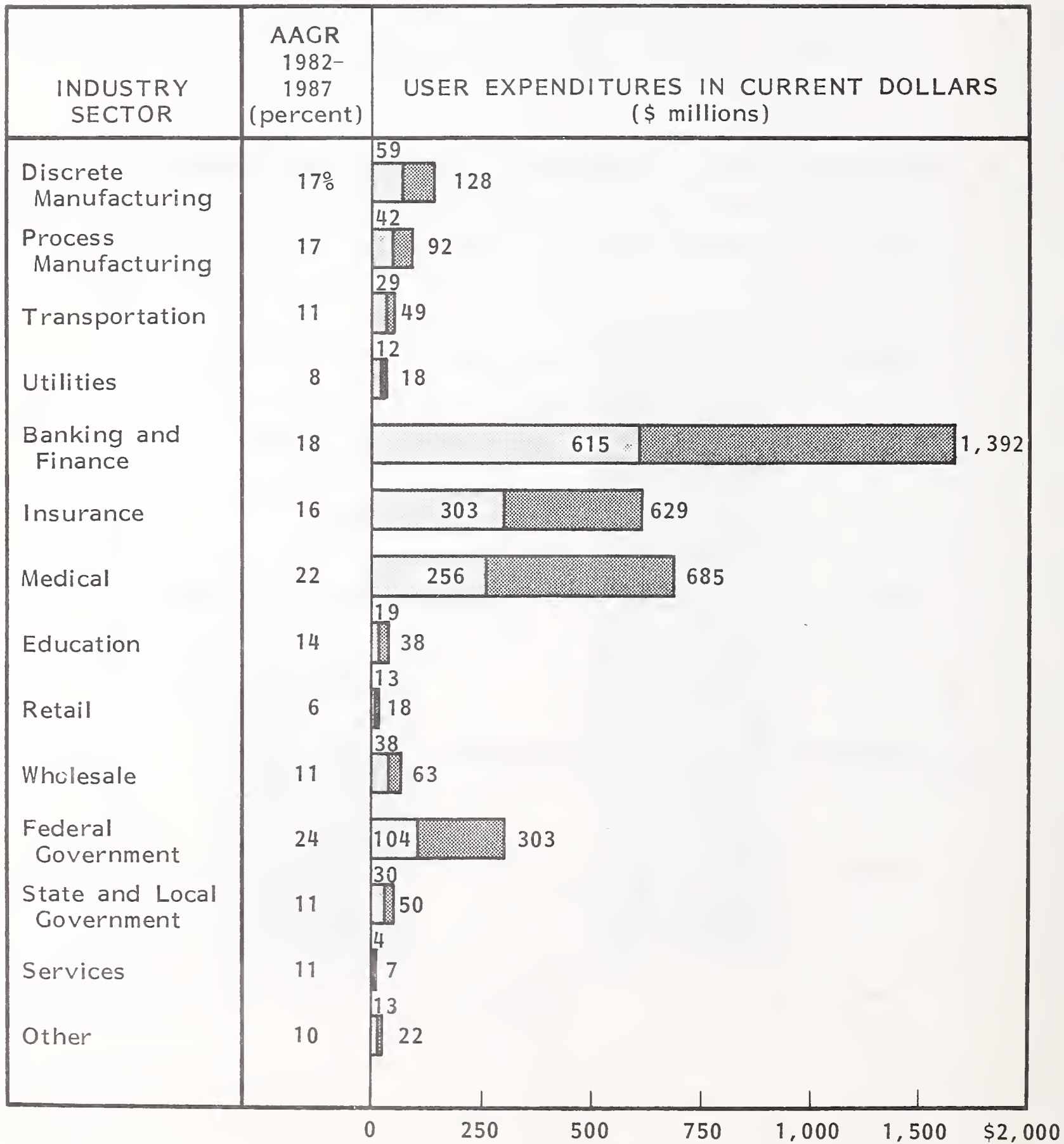
Total Expenditures

1982		$1,537 million
1987		$3,494 million

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INP
MAP2

EXHIBIT IV-3

PROCESSING FACILITIES MANAGEMENT - FUNCTION SPECIFIC
MARKET FORECAST BY INDUSTRY SECTOR, 1982-1987

INDUSTRY SECTOR	AAGR 1982-1987 (percent)	USER EXPENDITURES IN CURRENT DOLLARS ($ millions)
Discrete Manufacturing	9%	6 ▓ 9
Process Manufacturing	10	2 ▓ 4
Transportation	0	0
Utilities	0	2 / ▓ 2
Banking and Finance	0	0
Insurance	0	0
Medical	0	0
Education	0	0
Retail	0	0
Wholesale	0	0
Federal Government	7	40 ▓ 56
State and Local Government	0	0
Services	0	0
Other	0	0

0   10   20   30   40   50 $60
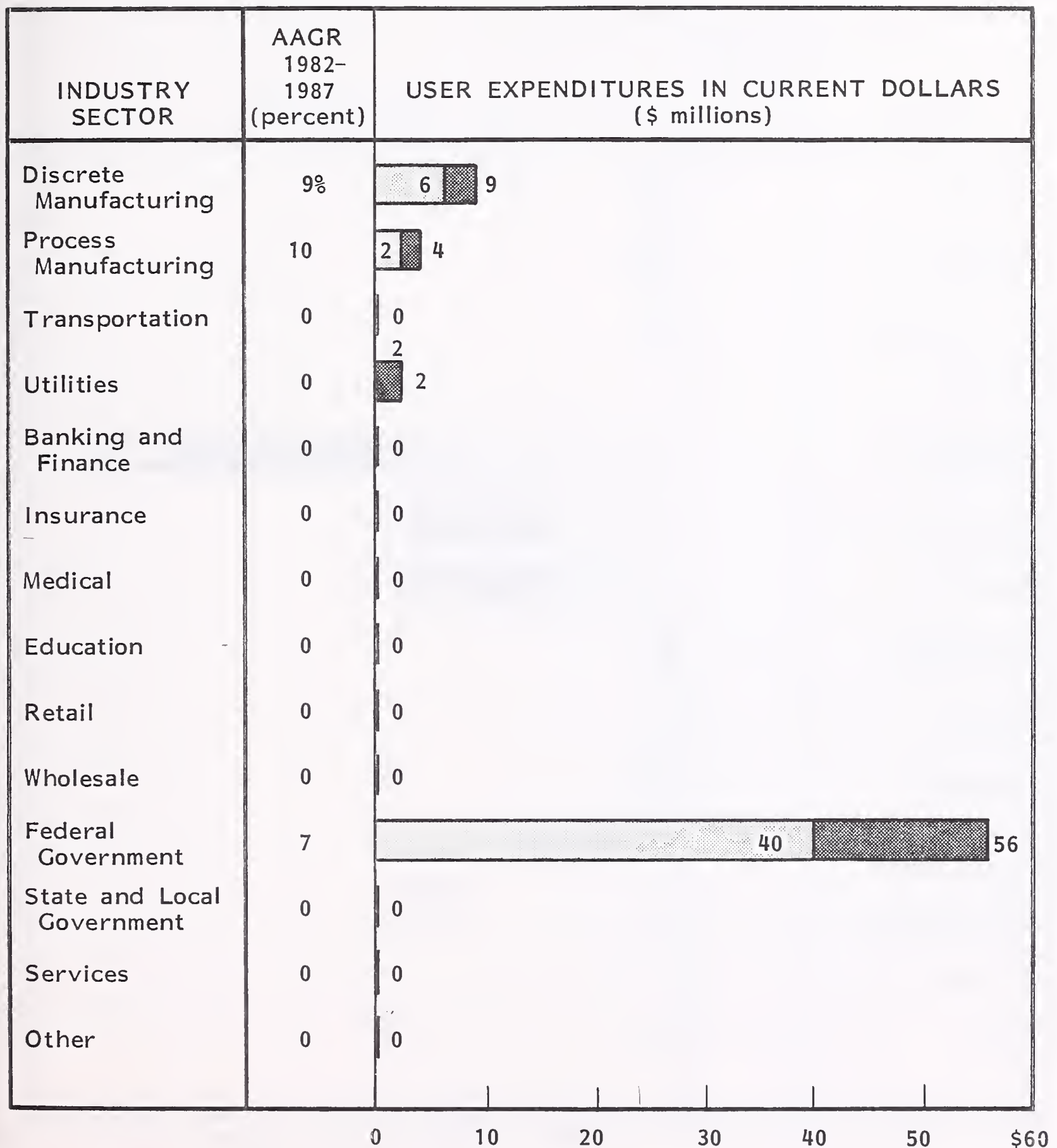
Total Expenditures

1982		$50 million
1987	▓	$71 million

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INPUT
MAP2

EXHIBIT IV-4

PROCESSING FACILITIES MANAGEMENT - INDUSTRY SPECIFIC
MARKET FORECAST BY INDUSTRY SECTOR, 1982-1987

INDUSTRY SECTOR	AAGR 1982-1987 (percent)	USER EXPENDITURES IN CURRENT DOLLARS ($ millions)
Discrete Manufacturing	17%	32 / 69
Process Manufacturing	18	34 / 75
Transportation	11	29 / 49
Utilities	0	2 / 2
Banking and Finance	18	615 / 1,392
Insurance	16	303 / 629
Medical	22	256 / 685
Education	14	19 / 38
Retail	6	13 / 18
Wholesale	11	33 / 56
Federal Government	0	0
State and Local Government	11	9 / 15
Services	11	4 / 7
Other	10	8 / 14

Scale: 0   250   500   750   1,000   1,250 $1,500
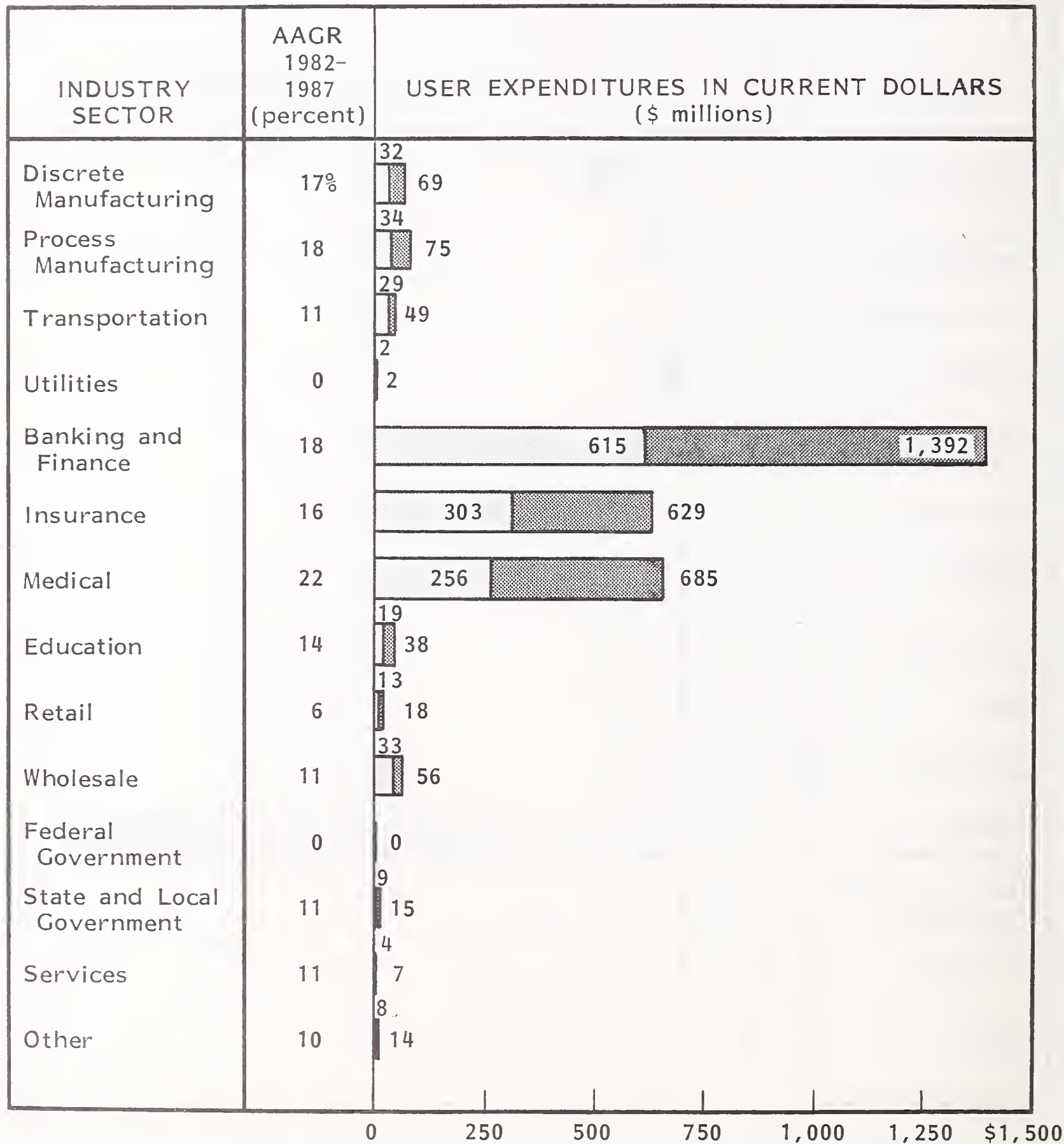
Total Expenditures

1982	$1,357 million
1987	$3,049 million

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EXHIBIT IV-5

PROCESSING FACILITIES MANAGEMENT - UTILITY

MARKET FORECAST BY INDUSTRY SECTOR, 1982-1987

INDUSTRY SECTOR	AAGR 1982-1987 (percent)	USER EXPENDITURES IN CURRENT DOLLARS ($ millions)
Discrete Manufacturing	19%	21 ▓▓ 50
Process Manufacturing	18	6 / ▓ 13
Transportation	0	0
Utilities	11	8 / ▓ 14
Banking and Finance	0	0
Insurance	0	0
Medical	0	0
Education	0	0
Retail	0	0
Wholesale	10	5 / 7
Federal Government	31	64 ▓▓▓▓▓▓▓▓▓ 247
State and Local Government	10	21 ▓ 35
Services	0	0
Other	11	5 / 8

0   50   100   150   200   250 $300
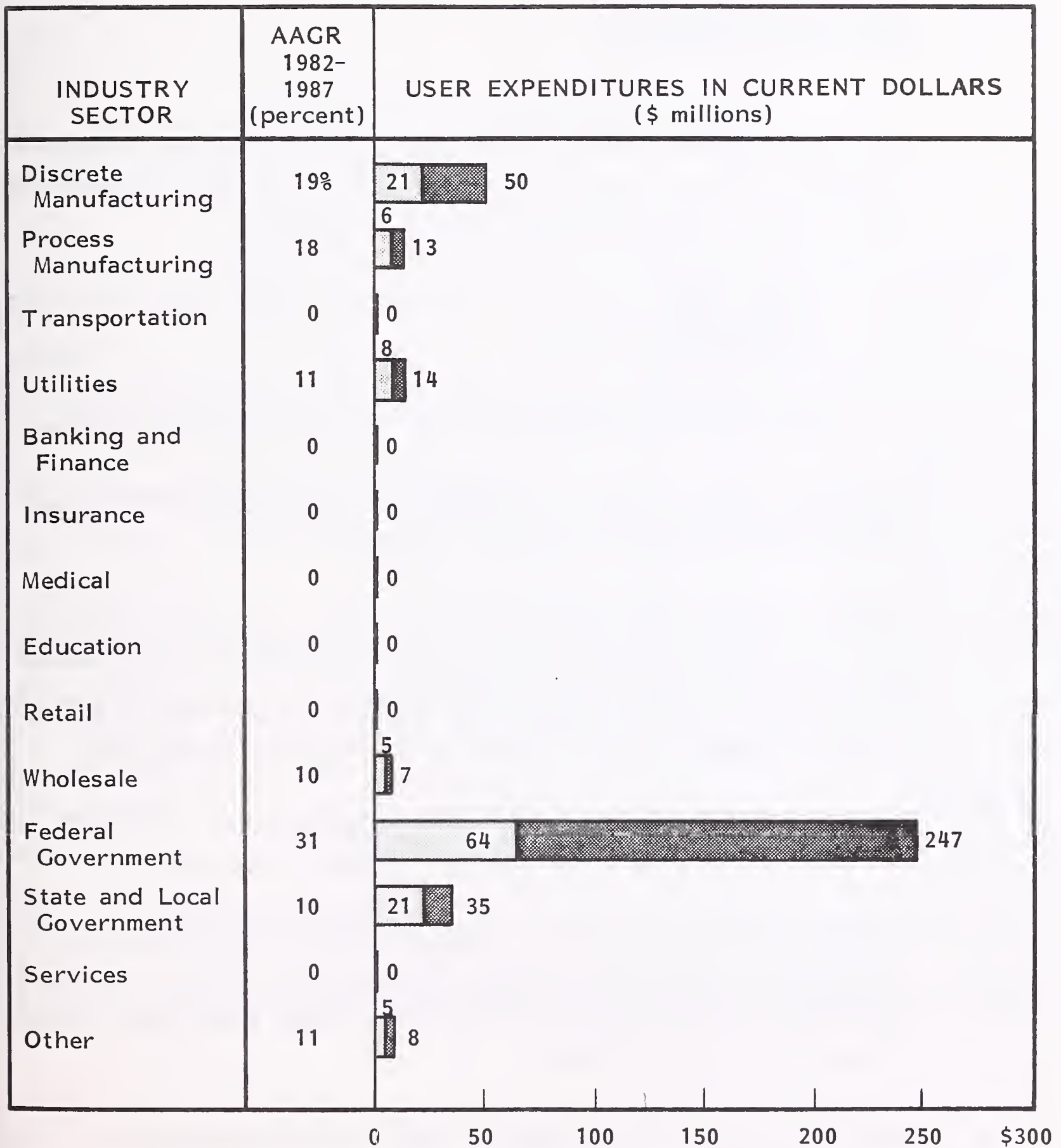
Total Expenditures

1982		$130 million
1987		$374 million

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INPUT
MAP2

- Utility PFM is almost entirely federal government.

C.   COMPETITIVE ANALYSIS

- The market leader is EDS with nearly 18% of the 1981 market, as shown in Exhibit IV-6, and an estimated 19% of the 1982 market. This dominance will continue to grow throughout the forecast period thanks to:

  - Project VIABLE, started in mid-1982 and already worth some $50 million to EDS in revenues.

  - EDS's dynamic, aggressive approach and reputation in this marketplace.

- INPUT estimates that EDS will have 24% of the market by 1987, barring the award of major government contracts to competitors.

- Securities Industry Automation Corporation (SIAC) continued to expand its service to the New York Stock Exchange and American Stock Exchange. Despite the extraordinary leap in overall trading volume, the NYSE was able to close business each day with little or no backlog of unprocessed orders.

- It seems likely that SIAC revenues will grow substantially during the next five years, slightly below the total market rate of 18%.

- Shared Medical Systems (SMS) is having a fine year, with revenues in the first nine months of 1982 up 25% and pretax income up 24%. SMS contracts usually allow price increases linked to the consumer price index which virtually eliminates the impact of inflation.

- Historically, most of SMS's revenue is from accute care hospitals, but a new physicians' services division is developing rapidly. INPUT expects SMS to become the second largest PFM vendor by 1984.

INPUT

EXHIBIT IV-6

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PROCESSING FACILITIES MANAGEMENT
VENDOR MARKET SHARE, 1981

RANK	VENDOR	REVENUES IN CALEN-DAR 1981 ($ millions)	MARKET SHARE (percent)
1	Electronic Data Systems	$236	17.6%
2	Securities Industry Automation	105	7.8
3	Shared Medical Systems	95	7.1
4	McAuto	78	5.8
5	American Express	70	5.2
6	Systematics	39	2.9
7	Bradford National	38	2.8
8	SEI	25	1.9
9	Seismograph Services	20	1.5
10	Informatics General	18	1.3

INPUT
MAP2

- McAuto is another beneficiary of the resilience of the medical sector. Its Health Services Division now services a base of over 1,000 hospitals. The growth of this division, expected at 20% per annum, is above the total PFM market rate.

- FDR is the leading PFM vendor in credit card processing services in the U.S. Growth in this market is tied to consumer use of that facility, which tends to follow the overall economic trends. Therefore INPUT believes this business will not recapture 1981 growth levels until 1984. Overall growth is expected to be around 15%.

- Systematics and SEI serve the commercial banks, the former concentrating on large units and the latter providing personal trust information systems. Both areas are expected to be high growth markets.

D. KEY MARKET TRENDS

- For some time there has been a trend toward high industry concentration of the vendors supplying PFM in each of these major markets:

  - Federal government.

  - Banking.

  - Finance.

  - Medical.

  - Insurance.

  - Manufacturing.

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INF

- This trend is intensifying, with the market concentration occurring in narrow vertical markets:

  - Insurance (government funded).

  - Credit card processing.

  - Credit union processing.

  - Personal trust processing.

  - Acute care hospital processing.

- In each area it is not unusual to find one vendor with 30% of the market revenue (and growing faster than the overall market, i.e., gaining market share) and as few as five major vendors, in total, servicing the market.

- Account management and control are all important, since the loss of a single contract can have a very serious impact on total PFM revenues. A case in point is the loss of the ARCO account by National Data which reduced PFM revenues from $14.6 million in 1981 to approximately $6 million in 1982 - a 60% drop.

- The sales agreement for PFM continues to be based on the provision of professionally designed, managed, and tailored processing facilities that include the assumption of the capital investment risk. The last item is particularly relevant in federal government contracts where capital purchase approval cycles can exceed five years, but service contract approvals can be obtained in less than two.

- Performance guarantees, excellent client relations, and quality service continue to be the best assurances against business loss (and prerequisites for a good market image).

INPUT

V BATCH PROCESSING SERVICES MARKET

V BATCH PROCESSING SERVICES MARKET

A. USER EXPENDITURES BY INDUSTRY SECTOR

- 1982 saw the batch processing market slip below the value of the software products market for the first time in its history. In current dollar terms the market was worth $4.2 billion, up 9% from 1981.

- INPUT believes that 1981 growth rates for batch processing will not be seen again. Expectations for the 1982-1987 timeframe are for an AAGR of 9%, as shown in Exhibit V-1, down from 15% in 1981. After a minor recovery in 1983, the batch services market is expected to begin a long, slow decline in growth rate, which in real terms (i.e., net of inflation) will equate to an annual growth of 2% in 1987.

- As with the RCS market, the worst hit of the three major batch services categories (function specific, industry specific, and utility) was utility services, which grew 2% over 1981 values. In real terms this was a decrease of 3% in the size of the market, and INPUT expects this market to remain flat, in real terms, throughout the forecast period.

- The industry specific market was most resistant to the economic crunch but is not expected to completely recover either. Competition for industry specific batch services is now too fierce from RCS, integrated systems, in-house

INPUT

EXHIBIT V-1

U.S. BATCH PROCESSING SERVICES MARKET,
1982-1987
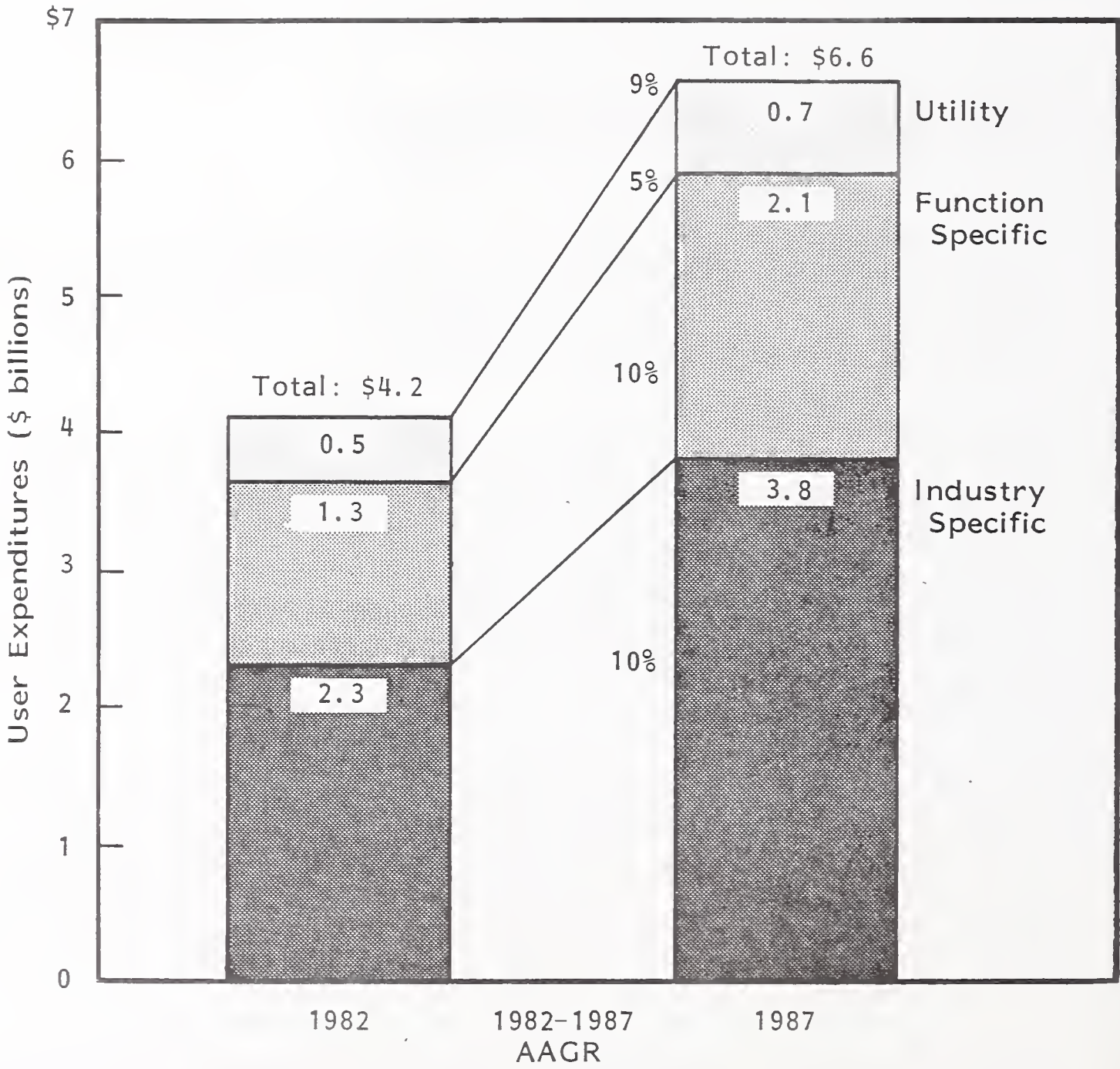
NOTE: Each market has been rounded to nearest $0.1 billion, therefore markets may not total precisely.

INPU
MAP2

systems, and personal computers for the market to continue historical growth rates.

- Process manufacturing is the only substantial growth sector in the forecast period, as shown in Exhibit V-2, mainly due to the large backlog of seismic processing business still extant. Although energy exploration and data acquisition in this field are substantially down, data processing growth is not dramatically off (still rising 11% in 1982). This is a very difficult market to penetrate, however, despite the attraction of its 18% growth rate.

- Banking and finance is the second largest market, worth $949 million in 1982. Net growth will be substantially impacted by conversions to in-house processing, remote computing services, and PFM. Most of the processing is correspondent bank processing. Typical services include:

  - Certificates of deposit.

  - Commercial checking.

  - Current accounts.

  - Commercial loan.

  - Installment loan.

  - Mortgage loan.

  - Passbook savings.

  - Personal checking.

- Data entry and output services such as the COM services offered by Anacomp continue to grow as a result of the effort to replace paper.

INPUT

EXHIBIT V-2

BATCH SERVICES

MARKET FORECAST BY INDUSTRY SECTOR, 1982-1987

INDUSTRY SECTOR	AAGR 1982-1987 (percent)	USER EXPENDITURES IN CURRENT DOLLARS ($ millions)
Discrete Manufacturing	8%	494 — 741
Process Manufacturing	18	723 — 1,647
Transportation	8	68 — 98
Utilities	8	84 — 120
Banking and Finance	7	949 — 1,328
Insurance	7	148 — 206
Medical	9	249 — 383
Education	4	67 — 81
Retail	6	248 — 334
Wholesale	7	348 — 480
Federal Government	5	67 — 85
State and Local Government	9	100 — 152
Services	7	342 — 470
Other	8	302 — 447

0   500   1,000   1,500 $2,000

Total Expenditures		
1982		$4,189 million
1987		$6,572 million

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INPU
MAP2

- The size of the discrete manufacturing batch services market is mainly due to function specific services (payroll, etc.) provided to the enormous number of small companies found in that sector. This is not a growth market, having almost attained its point of maximum value in real terms.

- The same is true of most of the remaining sectors. However, the size of these batch markets, in aggregate, is so large ($4.2 billion in 1982 and $6.6 billion in 1987) and so complex that massive conversions of large portions of this business are unlikely. Rather, the batch market will experience a slow loss of growth, then a slow decline over a long period of time (possibly as long as the remainder of the century).

1. FUNCTION SPECIFIC SERVICES

- For a long time the backbone of the batch services market, function specific services will continue to provide much of the growth in a large number of sectors:

    -       Medical.

    -       Retail.

    -       Wholesale.

    -       Other services.

    And they will continue to support growth in the fastest growing sector, process manufacturing, as shown in Exhibit V-3.

- The largest batch services supplier worldwide (ADP) is also the main supplier of function specific services. Paradoxically a gradual downturn in this market can benefit companies like ADP: the smaller vendors will rapidly find themselves in financial difficulty, making acquisitions more plentiful, while the larger vendors (whose efficiencies are greater) can still make reasonable

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INPUT

EXHIBIT V-3

BATCH SERVICES - FUNCTION SPECIFIC
MARKET FORECAST BY INDUSTRY SECTOR, 1982-1987

INDUSTRY SECTOR	AAGR 1982-1987 (percent)	USER EXPENDITURES IN CURRENT DOLLARS ($ millions)
Discrete Manufacturing	8%	313 / 471
Process Manufacturing	17	114 / 249
Transportation	7	22 / 31
Utilities	8	45 / 66
Banking and Finance	7	208 / 297
Insurance	6	28 / 37
Medical	12	36 / 64
Education	4	20 / 24
Retail	10	96 / 153
Wholesale	11	173 / 296
Federal Government	6	13 / 17
State and Local Government	8	21 / 31
Services	9	94 / 143
Other	11	132 / 222

0   100   200   300   400 $500
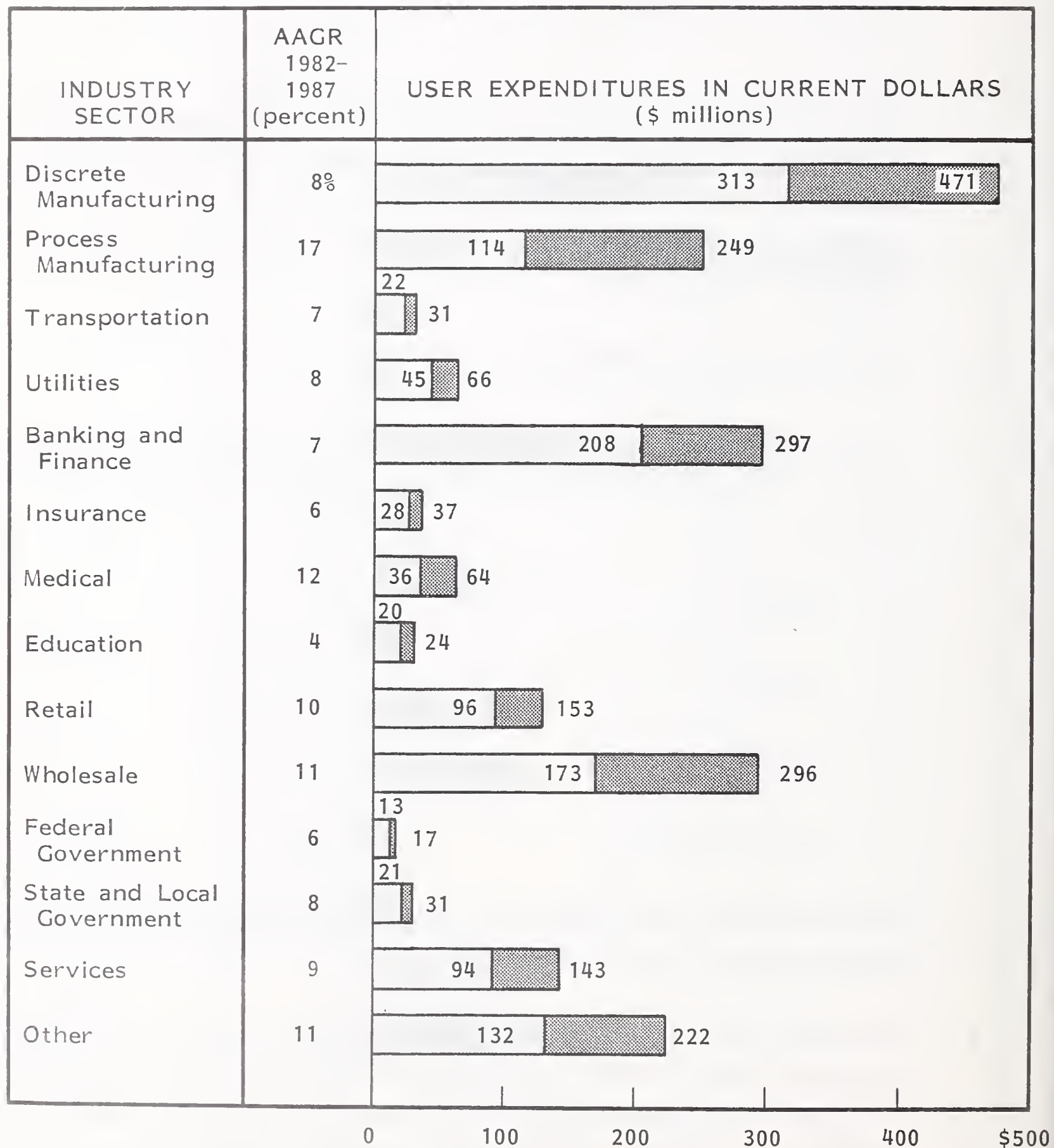
Total Expenditures

1982	$1,315 million
1987	$2,101 million

- 62 -

INP
MAP2

profits from the acquired client bases. ADP will therefore have benefited by acquisitions on both the growth and the decline of the market.

- One application area which will grow rapidly is mail list processing. This is already a several hundred million dollar a year business. It can be batch or RCS.

2. INDUSTRY SPECIFIC SERVICES

- Most sector markets in this services section have reached their peak (banking and finance, insurance, services) or are already declining in real terms (education, retail, wholesale). Five sectors are exceptions:

    - Process manufacturing, the largest sector by 1987 and the most rapidly growing sector (due to one application: seismic processing).

    - Discrete manufacturing, transportation, medical, state and local government (small markets, modest growth).

- The largest 1982 market, banking and finance, has peaked and is being converted to RCS, PFM, integrated systems, and in-house systems. Like all batch conversion markets this will take time and the market will experience a small growth in current dollar terms while it undergoes a fundamental change.

- Exhibit V-4 provides the individual sector data.

3. UTILITY SERVICES

- Only four markets are expected to show any real growth (and only minor growth in every instance): process manufacturing, banking and finance, insurance, and state and local government.

- All other markets are stationary or in decline and some will shortly disappear in the rounding error (education, transportation, medical, and services).

INPUT

EXHIBIT V-4

BATCH SERVICES - INDUSTRY SPECIFIC

MARKET FORECAST BY INDUSTRY SECTOR, 1982-1987

INDUSTRY SECTOR	AAGR 1982-1987 (percent)	USER EXPENDITURES IN CURRENT DOLLARS ($ millions)
Discrete Manufacturing	10%	102 / 166
Process Manufacturing	19	544 / 1,299
Transportation	9	34 / 54
Utilities	7	15 / 20
Banking and Finance	7	724 / 1,005
Insurance	7	105 / 140
Medical	8	201 / 303
Education	5	31 / 39
Retail	3	118 / 138
Wholesale	3	68 / 79
Federal Government	0	0
State and Local Government	9	25 / 39
Services	6	227 / 302
Other	6	144 / 191

0   200   400   600   800   1,000   1,200 $1,400

Total Expenditures

1982		$2,338 million
1987		$3,775 million

- 64 -

INPU
MAP2

- INPUT will continue to report this market as long as the total market exceeds $50 million, but it is clear that the market is already in decline: in 1982, current dollar growth was 2% over 1981 (or a net contraction in the market of over 3%). For the rest of the five-year forecast the market will continue to contract, on average 1% per annum.

- Exhibit V-5 provides the detail for each sector market.

B. COMPETITIVE ANALYSIS

- Despite having decreased its reliance on batch services revenue to the point where the majority of its revenue comes from RCS, ADP is still the nation's leading vendor in the batch market with nearly 8% of the entire 1981 batch services revenues.

- This is no mean feat, since the batch market is a very diverse and fragmented services business, with enormous variety in the applications processed and the type of client served. ADP was able to do this thanks to the most aggressive (and successful) acquisition policy ever implemented in the services industry. Approximately 80 companies have been acquired.

- INPUT expects this ADP policy to continue throughout 1987, and even to accelerate as the batch services market begins to contract (see Section A-1 in this chapter). The industry consolidation is far from over and, in terms of numbers of participants, is only beginning.

- CDC and NCR both have long-established positions in the batch processing market. For CDC, who has a company strategy that targets the services industry in its broadest definition, this is not surprising. But for NCR the batch business is an anachronism.

INPUT

EXHIBIT V-5

BATCH SERVICES - UTILITY

MARKET FORECAST BY INDUSTRY SECTOR, 1982-1987

INDUSTRY SECTOR	AAGR 1982-1987 (percent)	USER EXPENDITURES IN CURRENT DOLLARS ($ millions)
Discrete Manufacturing	6%	79 ▨ 104
Process Manufacturing	9	65 ▨ 99
Transportation	3	12 ▨ 13
Utilities	7	24 ▨ 34
Banking and Finance	9	17 ▨ 26
Insurance	8	15 ▨ 22
Medical	5	12 ▨ 16
Education	3	16 ▨ 18
Retail	5	34 ▨ 43
Wholesale	0	105 (1987) ▨ 107
Federal Government	5	54 ▨ 68
State and Local Government	9	54 ▨ 82
Services	4	21 ▨ 25
Other	5	26 ▨ 34

0   25   50   75   100 $125
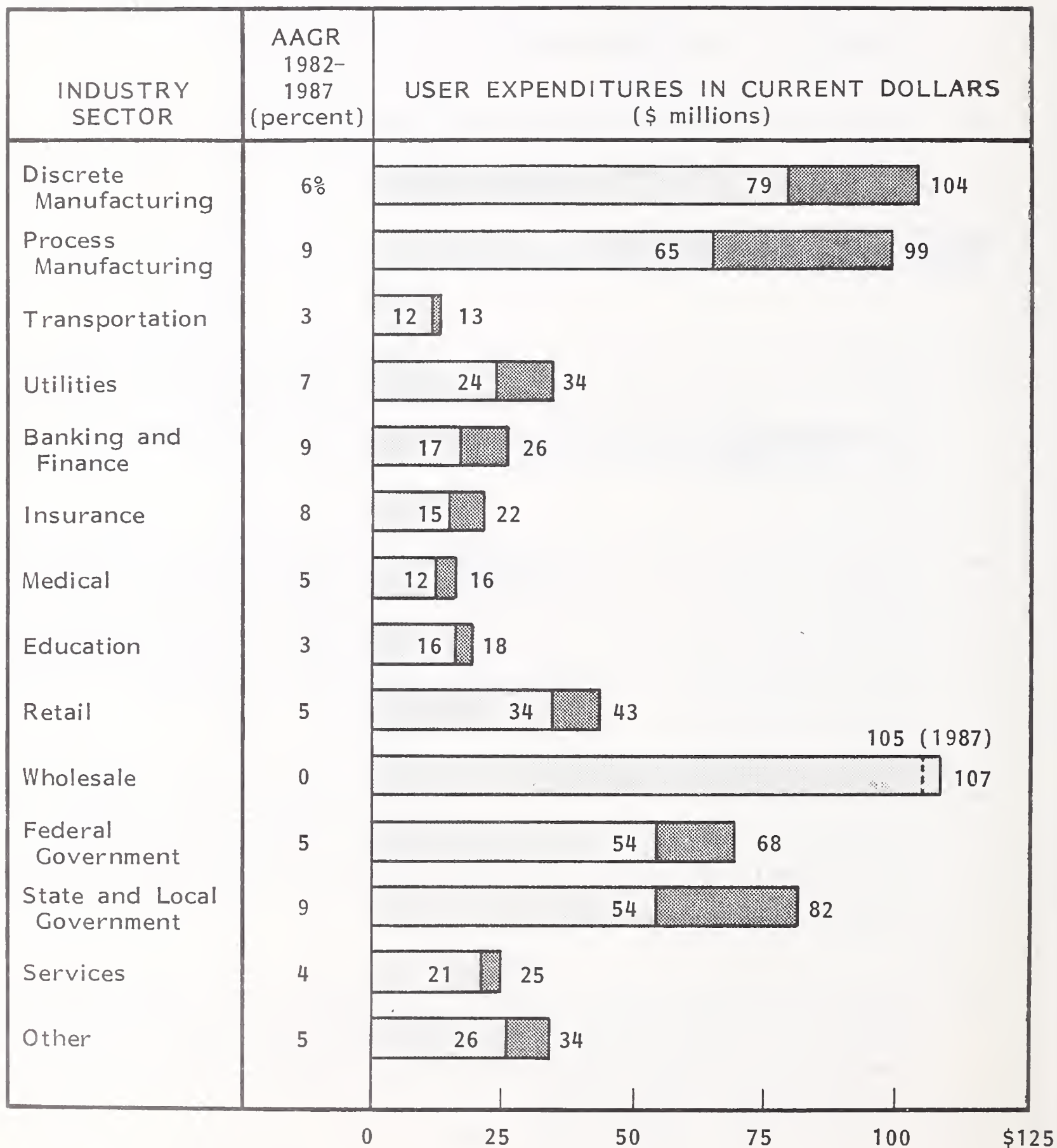
Total Expenditures

1982		$536 million
1987	▨	$689 million

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INPI
MAP2

- Litton Industries, Geosource, and Texas Instruments are all seismic data processing companies. With Digicon, Seismograph Services, and Seiscom Delta, approximately 10% of the entire batch processing market is now grouped in one application. It is a very specialized, integrated service, however, embedded in geophysical surveys and surrounded by highly specialized consulting/data interpretation services.

- As a result, despite its size, none of this business is processed by the regular vendors of batch processing services. In 1982, oil exploration rigs in use dropped by 47% and a greater proportion than ever before of the explorations executed were not fully subscribed. This increased the amount of data held by vendors as proprietary data, which bodes well for future processing.

- Bank of America offers function specific services (payroll, accounts payable and receivable, and a management information service). Revenues shown in Exhibit V-6 include the Decimus subsidiary.

- The top ten batch services suppliers in Exhibit V-6 captured just over 28% of the total market in 1981 - a measure of the current dispersion of the market. This percentage is expected to rise to 35% by 1987.

C.   KEY MARKET TRENDS

- The batch market, which until 1975 was the largest services market available, has already fallen to fourth place behind RCS, professional services, and software products. By 1984 it will also be overtaken by the integrated systems market.

- As the batch market goes into decline, it will increasingly become the target of a diverse array of low cost, high performance alternatives, many of which are beginning their penetration today:

INPUT

EXHIBIT V-6

BATCH PROCESSING SERVICES
VENDOR MARKET SHARE, 1981

RANK	VENDOR	REVENUES IN CALEN- DAR 1981 ($ millions)	MARKET SHARE (percent)
1	ADP	$297	7.8%
2	CDC	120	3.1
3	Litton Industries	119	3.1
4	Geosource	116	3.0
5	Texas Instruments	104	2.7
6	CCH Computax	75	2.0
7	Bank of America	75	2.0
8	Tymshare	72	1.9
9	Nielson A.C.	54	1.4
10	NCR	47	1.2

INP
MAP2

- On-line alternatives from the current vendor providing the batch services.

- In-house integrated systems, based on minicomputers, microcomputers, or personal computers.

- Software products that run on the existing in-house mainframe.

• The thousands of small batch vendors that make up half the market, already in difficulty due to the recession, will provide a rich source of acquisitions for the larger, efficient vendors, most of whom are already multiservice vendors (offering RCS, batch, professional services, and/or software products, and/or integrated systems).

• The first markets to feel the impact will be those industry or function specific applications that represent a minimum of $5 million of revenues from a single hardware/software set (i.e., an application with a frozen specification running on a single type of hardware under one operating system). At this threshold it is worthwhile for a vendor to make a development/marketing/sales effort to target such an opportunity.

• With the growing concentration, the batch industry will increasingly feel the force of the U.S. antitrust laws. (In one batch market, COM, this has already occurred with Anacomp's acquisition of DSI being contested by the Justice Department.)

INPUT

VI INTEGRATED SYSTEMS

VI INTEGRATED SYSTEMS

A. USER EXPENDITURES BY INDUSTRY SECTOR

- The growth of integrated systems sales in 1982 was off 13% compared with 1981 (total revenues grew only 21% compared with 34% in 1981). Few vendors escaped the trend. Particularly hard hit as a group were the CAD/CAM vendors, whose pretax income suffered considerably even though revenues continued to climb.

- Individual companies that payed attention to their competitive posture were nevertheless able to accomplish outstanding performances in their particular field:

    - ASK Computer in manufacturing control systems.

    - Intergraph in the CAD/CAM group.

    - Reynolds and Reynolds (who managed to increase revenues in the first nine months of 1982, selling systems to automobile dealers).

- The integrated systems industry was characterized by sharply reduced prices in 1982, as vendors attempted to offset weak demand and increased competition. Overall the deterioration in balance sheets was severe.

INPUT

- The total value of shipments in 1982 was $3.5 billion and growth is expected to be 22% in 1983. This is a relatively poor expectation for an industry used to growth averaging 35%. Thereafter, 1984 is expected to be a year of recovery and 1985 the year that clears the pipeline of delayed orders.

- Finally, in 1986 the industry will resume steady growth at just over 30%, down from pre-1981 years. Exhibit VI-1 shows the compound growth of function specific systems and industry specific systems.

- By far the best market is the discrete manufacturing sector where 80% of the businesses have less than 50 employees. Reduced cost integrated systems that offer sophisticated manufacturing control coupled with basic accounting are finding a ready market, even though the largest manufacturing concerns (which account for less than 2% of the establishments) are experiencing real difficulty in surviving. Start-up manufacturing concerns continue to be the bulk of new ventures.

- Integrated systems have already made substantial inroads into the banking and finance sector but the recent deregulation moves will expand this market further. Growth from 1982 to 1987 is expected to be at an AAGR of 30%.

- The fastest growth area is expected to be the services sector serving tax consultants, lawyers, and CPA firms. Growth here is expected to be 33% AAGR from 1982 to 1987, albeit from a much smaller base.

- The least interesting market is education which accounted for the smallest volume of revenue in 1982 and will grow the slowest over the forecast period.

- Exhibit VI-2 provides the detail on each sector.

IN

EXHIBIT VI-1

U.S. INTEGRATED SYSTEMS MARKET,
1982-1987
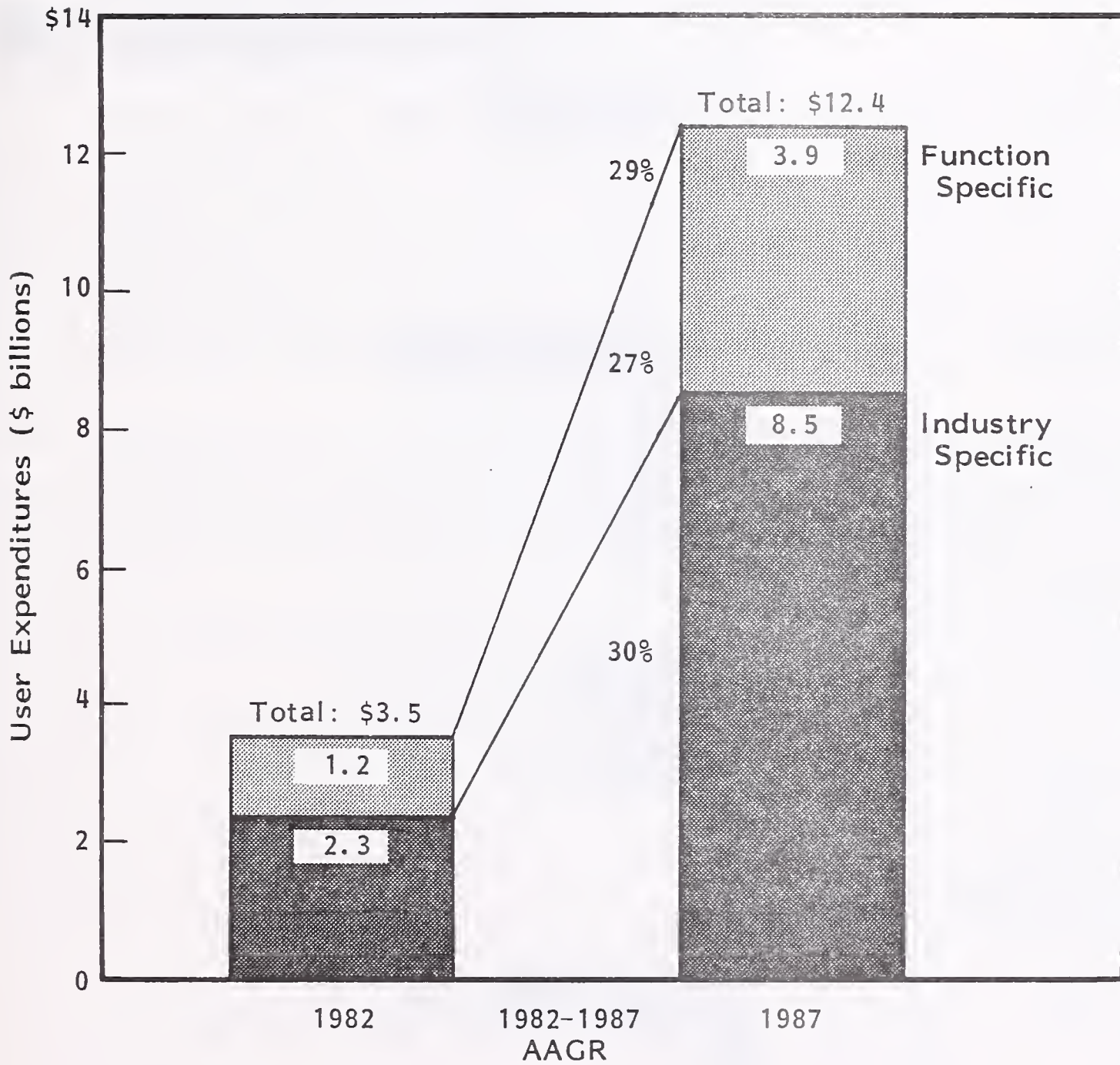
NOTE: Each market has been rounded to nearest $0.1 billion, therefore markets may not total precisely.

INPUT
MAP2

EXHIBIT VI-2

INTEGRATED SYSTEMS

MARKET FORECAST BY INDUSTRY SECTOR, 1982-1987

INDUSTRY SECTOR	AAGR 1982- 1987 (percent)	USER EXPENDITURES IN CURRENT DOLLARS ($ millions)
Discrete Manufacturing	32%	961 ▒▒▒ 3,797
Process Manufacturing	29	383 ▒▒▒ 1,360
Transportation	22	147 / 390
Utilities	23	120 / 333
Banking and Finance	30	478 ▒▒▒ 1,751
Insurance	24	201 / 590
Medical	30	175 / 638
Education	19	74 / 176
Retail	30	222 / 819
Wholesale	29	231 / 809
Federal Government	21	66 / 170
State and Local Government	20	48 / 117
Services	33	299 ▒▒▒ 1,253
Other	23	80 / 228

	0	1,000	2,000	3,000	$4,000

Total Expenditures

1982		$ 3,485 million
1987		$12,431 million

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INPL
MAP2

B. INTEGRATED SYSTEMS BY TYPE

I. FUNCTION SPECIFIC SYSTEMS

- The function specific systems market has been a good growth area for integrated systems vendors but was beginning to lag even in 1981 before the full impact of the recession was felt.

- Right on cue, the personal computer/microcomputer-based integrated system has arrived to provide a substantial new market to function specific systems vendors. Unfortunately, while the volume of units sold is very high, the contribution to revenues and margins is low. In addition, the sale of these devices requires sales techniques (mass merchandising, distributor networks) with which most integrated system vendors are unfamiliar.

- Nevertheless the market is wide open to the vendor willing to provide the traditional services absent from the offerings of the personal computer retail outlets and software publishers that have begun tapping the market:

  - Identification of need (analysis).

  - Front-end tailoring of systems.

  - Initial training.

  - Ongoing support.

  - (Ideal, but optional) system maintenance.

- Exhibit VI-3 identifies the growth areas and major markets. The markets are proportional in size to the number of establishments found in each sector.

INPUT

EXHIBIT VI-3

INTEGRATED SYSTEMS - FUNCTION SPECIFIC

MARKET FORECAST BY INDUSTRY SECTOR, 1982-1987

INDUSTRY SECTOR	AAGR 1982-1987 (percent)	USER EXPENDITURES IN CURRENT DOLLARS ($ millions)
Discrete Manufacturing	28%	255 — 875
Process Manufacturing	26	101 — 319
Transportation	22	51 — 142
Utilities	27	31 — 100
Banking and Finance	25	115 — 350
Insurance	21	131 — 347
Medical	26	77 — 245
Education	18	20 — 46
Retail	32	121 — 476
Wholesale	30	110 — 405
Federal Government	19	14 — 34
State and Local Government	20	21 — 53
Services	33	84 — 353
Other	25	51 — 160

0   200   400   600   800 $1,000

Total Expenditures

1982		$1,185 million
1987		$3,905 million

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INP
MAP

2. INDUSTRY SPECIFIC SYSTEMS

- The industry specific market is twice the size of the function specific market and growing faster. Despite this (and the success of vendors who have targeted obvious markets), the market has remained relatively free of very large, dedicated vendors.

- For the most part, vendors are either:

  - Essentially single product, small minicomputer OEMs who are developing a small user base of typically less than 100 systems installed, or:

  - Information systems vendors who see the integrated systems market as a lucrative sideline (many of whom have been driven to offer such systems by competitive inroads on their batch user base).

- The dedicated industry specific integrated systems vendor is capturing the largest share of available growth, however:

  - Concentrating on the needs of specific vertical markets brings benefits at all levels: marketing, product definition, in-house understanding of the business, competitive analysis, prospect selection, and external company image.

  - Concentrating on one set of hardware/software is also beneficial for the initial market development phase; with the first 350 or so installations locked in, expansion to other hardware can begin.

- Industry specific vendors benefit, by definition, from less competition (in terms of numbers of vendors) than function specific vendors and are able to integrate function specific applications into their main product (e.g., financial management systems feeding off the same data base used by the manufacturing control system). This virtually locks out competitive software products that provide only one of the functions.

INPUT

- Many industry specific markets have yet to be developed. The main sector markets to date are (in order):

    - Discrete manufacturing.

    - Banking/finance.

    - Process manufacturing.

    - Services.

- Exhibit VI-4 provides the market values and growth rates of each sector. By 1987 the industry specific market is expected to be worth $8.5 billion, more than any of the processing services industry specific markets in that year.

C.   COMPETITIVE ANALYSIS

- With a market share almost twice the size of the nearest vendor, Computervision is the leading vendor of integrated systems in the CAD/CAM market, as shown in Exhibit VI-5. By 1987 Computervision will be a three-quarter-billion dollar CAD/CAM vendor.

- The most successful CAD/CAM vendor in 1982's difficult economy has been Intergraph, which added nearly $40 million to its revenues in an extremely competitive market and in the face of substantial user cutbacks in CAD/CAM expenditures. Intergraph overtook Calma (GE) for fourth place in 1982.

- The second largest vendor, Triad, services the distribution sector (retail and wholesale stores) - or "main street America" establishments. Growth has stalled, however, because of the economy.

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EXHIBIT VI-4

INTEGRATED SYSTEMS - INDUSTRY SPECIFIC
MARKET FORECAST BY INDUSTRY SECTOR, 1982-1987

INDUSTRY SECTOR	AAGR 1982-1987 (percent)	USER EXPENDITURES IN CURRENT DOLLARS ($ millions)
Discrete Manufacturing	33%	706 — 2,922
Process Manufacturing	30	282 — 1,041
Transportation	21	95 — 248
Utilities	21	89 — 233
Banking and Finance	31	363 — 1,401
Insurance	28	70 — 243
Medical	32	98 — 393
Education	19	54 — 130
Retail	28	101 — 343
Wholesale	28	120 — 404
Federal Government	21	52 — 136
State and Local Government	19	27 — 64
Services	33	215 — 900
Other	20	28 — 68

Scale: 0   500   1,000   1,500   2,000   2,500 $3,000

Total Expenditures

1982		$2,300 million
1987		$8,526 million

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INPUT
MAP2

EXHIBIT VI-5

INTEGRATED SYSTEMS
VENDOR MARKET SHARE, 1981

RANK	VENDOR	REVENUES IN CALEN- DAR 1981 ($ millions)	MARKET SHARE (percent)
1	Computervision	$147	5.1%
2	Triad Systems	79	2.7
3	Applicon	69	2.4
4	Calma (GE)	62	2.2
5	Intergraph	60	2.1
6	Gerber Scientific	57	2.0
7	Computer Consoles	51	1.8
8	C3	43	1.5
9	Reynolds and Reynolds	40	1.4
10	Auto-trol	40	1.4

INP
MAP2

- Computer Consoles is the uncontested number one supplier of automated directory assistance systems with very strong prospects. Revenues continued to grow in 1982 at over 30%.

- C3 integrates systems for the government, particularly for defense department contracts.

- Reynolds and Reynolds has boldly entered assembly of its own computer systems, despite the multiple historic examples of failure from other companies trying to do the same thing. R&R still managed to hold revenues above 1981 despite the continuing decline of their principal market - automobile dealers.

- Auto-trol has had a difficult year, introducing a new 32-bit system in the face of strong competition. The company continues to show a loss on operations.

D.   KEY TRENDS AND ISSUES

- The key to a successful integrated systems venture is software and vertical market specialization. The number of such opportunities far exceeds the products available at this time.

- Hardware specialization is also necessary in the early stages. This facilitates marketing and sales efforts and establishes good in-house understanding of company products. Once the initial market penetration is accomplished, three directions can be taken:

    - Develop remote computing services that capture prospects too small (or tentative) to obtain their own system; ASK Computer has begun establishing such a service.

INPUT

- Expand product offerings by adding low-entry systems (e.g., personal computer-based systems) and top of the line products (not necessarily, but preferably of the same hardware line as that used for the mainstream business).

- Add integrated software extensions that (a) expand add-on revenues from the installed customer base, (b) improve the competitive posture of the company's main software product; such extensions should feed off an integrated data base.

• Exhibit VI-6 shows the uneven impact 1982 has had on the main integrated systems vendors. In the light of the overall contraction of pretax income, ASK Computer's performance is all the more noteworthy.

• The industry has yet to see a merger of two integrated systems vendors but this phase will begin as the economic recovery is fully established in 1985. At that time there will be numerous opportunities for successful integrated systems vendors to acquire smaller vendors who have an undercapitalized, viable product.

INI

EXHIBIT VI-6

COMPARISON OF FIRST NINE MONTHS RESULTS, 1981/1982, INTEGRATED SYSTEMS VENDORS

COMPANY	REVENUE			PRETAX INCOME		
	Q1-Q3 ($ millions)		PERCENT CHANGE	Q1-Q3 ($ thousands)		PERCENT CHANGE
	1981	1982		1981	1982	
ASK Computer	$ 13.0	$ 19.3	48%	$ 2,443	$ 3,729	53%
Auto-trol	34.2	32.8	(4)	(5,778)	(4,187)	28
Computervision	194.4	243.5	25	43,990	39,635	(10)
Computer Consoles	33.4	43.9	31	3,074	669	(78)
DIMIS	2.5	3.7	51	72	(1,334)	(1,953)
Intergraph	62.0	100.7	63	10,323	13,322	29
Reynolds and Reynolds	88.4	89.8	2	4,266	3,605	(15)
Triad Systems	63.1	66.3	5	8,300	2,900	(65)
Weighted Averages	–	–	26%	–	–	(37%)

INPUT
MAP2

VII INDUSTRY SECTOR MARKETS

VII   INDUSTRY SECTOR MARKETS

A.   ECONOMIC GROWTH

- The general economic trends that are at work in a given industry sector form the baseline for growth of the information service markets that address that particular sector. While this influence is felt by all prospect/client companies that participate in the sector, other factors must be taken into account when determining the viability of information services and products in a given sector:

  - Structural changes in the sector affecting the number and size of the establishments and employment.

  - Regulatory changes that mandate changes in the way business is transacted.

  - Financial health of the average company.

- Macro factors such as the state of the national economy also play a major role, particularly in the psychology of the consumer and in determining the demand for goods and services.

INPUT

- Partially offsetting any downturn (and substantially adding to any upswing) of general economic trends are three well-known factors relating to the information services industry:

    - The growth in usage of information services/products has outstripped the growth in the GNP.

    - The growth in usage of information services in any industry sector has exceeded the growth of the sector serviced.

    - The growth in usage of information services by any single user has generally exceeded the growth of that user's business.

- The current economic downturn has confirmed much of this. While the U.S. GNP contracted in 1982, the information services industry grew by 16% over 1981. This is a strong result.

B. INDUSTRY SECTOR ANALYSIS

- As a basis for the forecast, INPUT updates each year the industry sector statistics on employment, number of establishments, and the value of shipments (or other measure of industry sector activity).

- The demographic statistics of each sector were tabulated this year from the current edition of County Business Patterns, U.S. Summary, 1979.

- Shipment values were derived from a number of industry sources:

    - Census information for each subsector, when available.

    - Data compiled from Statistical Abstract of the U.S., 1981.

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INF

-    U.S. Industrial Outlook, 1982.

- The current size of each sector was projected from real historical growth over the most recent year data published by the federal government.

- Exhibit VII-I summarizes the total user expenditures, in current dollars, in 1982 (and forecasted 1987) information services usage.

- Discrete manufacturing accounts for 16% of the 1982 services market (second largest market after banking and finance) but will rise to 19% of the total market by 1987. This is principally due to the amount of information processing absorbed in-house by the banking and finance sector, which otherwise would easily be the largest market.

- Between them these two sectors will account for 37% of the entire information services market in 1987.

- All of the markets will exceed $2 billion by 1987, with the lone exception of education. Process manufacturing ($8.6 billion), federal government ($6.8 billion), insurance ($5.4 billion), and services ($4.1 billion) are the other main markets.

C.   DISCRETE MANUFACTURING

- The number of establishments in the discrete manufacturing sector is decreasing at a rate of approximately 3,000 per year, yet this sector accounts for the second largest number of startups in the U.S. economy (after retail distribution). Exhibit VII-2 provides the latest official subsector demographic data available (1979).

- Exhibit VII-3 relates EDP budget to total budget spent, by size of company (large - $1 billion and over, medium - $200 million-$999 million, small - less

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INPUT

EXHIBIT VII-1

INFORMATION SERVICES INDUSTRY

MARKET FORECAST BY INDUSTRY SECTOR, 1982-1987

INDUSTRY SECTOR	AAGR 1982-1987 (percent)	USER EXPENDITURES IN CURRENT DOLLARS ($ millions)
Discrete Manufacturing	28%	4,160 — 14,544
Process Manufacturing	26	2,658 — 8,604
Transportation	26	677 — 2,187
Utilities	20	928 — 2,301
Banking and Finance	24	4,341 — 12,946
Insurance	24	1,819 — 5,391
Medical	26	1,321 — 4,211
Education	15	404 — 803
Retail	22	1,396 — 3,781
Wholesale	24	1,346 — 3,910
Federal Government	19	2,803 — 6,777
State and Local Government	14	1,433 — 2,738
Services	22	1,525 — 4,078
Other	19	1,110 — 2,649

0   2,500   5,000   7,500   10,000   12,500 $15,000

Total Expenditures

1982		$25,921 million
1987		$74,920 million

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INPU
MAP2

EXHIBIT VII-2

DISCRETE MANUFACTURING INDUSTRY SECTOR -
DEMOGRAPHIC DATA

STANDARD INDUSTRIAL CLASSIFI-CATION	INDUSTRY NAME	TYPE OF STATISTIC	DATA
All	Discrete Manufacturing	Value of Shipments Number of Establishments Number of Employees	$715.2 Billion 197,630 11.9 Million
23	Apparel	Value of Shipments (1979) Number of Establishments (1979) Number of Employees (1979)	$ 43.0 Billion 22,554 1.3 Million
25	Furniture	Value of Shipments (1978) Number of Establishments (1979) Number of Employees (1979)	$ 19.6 Billion 8,904 506,569
27	Printing	Value of Shipments (1978) Number of Establishments (1979) Number of Employees (1979)	$ 56.1 Billion 44,415 1.2 Million
31	Leather	Value of Shipments (1978) Number of Establishments (1979) Number of Employees (1979)	$ 8.2 Billion 2,671 238,369
34	Fabricated Metal Products	Value of Shipments (1978) Number of Establishments (1979) Number of Employees (1979)	$101.3 Billion 30,901 1.7 Million
35	Machinery	Value of Shipments (1978) Number of Establishments (1979) Number of Employees (1979)	$143.2 Billion 45,322 2.5 Million
36	Electronics	Value of Shipments (1978) Number of Establishments (1979) Number of Employees (1979)	$100.5 Billion 13,538 2.0 Million
37	Trans-portation Equipment	Value of Shipments (1978) Number of Establishments (1979) Number of Employees (1979)	$188.8 Billion 8,661 2.0 Million

Continued

INPUT
MAS2 MAP2

EXHIBIT VII-2 (Cont.)

DISCRETE MANUFACTURING INDUSTRY SECTOR -
DEMOGRAPHIC DATA

STANDARD INDUSTRIAL CLASSIFI- CATION	INDUSTRY NAME	TYPE OF STATISTIC	DATA
38	Scientific & Control Instruments	Value of Shipments (1978) Number of Establishments (1979) Number of Employees (1979)	$ 33.7 Billion 6,921 15,017
39	Miscel- laneous Manufacturers	Value of Shipments (1978) Number of Establishments (1979) Number of Employees (1979)	$ 20.8 Billion 13,743 455,248

INPU
MAS2 M

EXHIBIT VII-3

EDP BUDGET AS A PERCENT OF TOTAL BUDGET IN THE DISCRETE MANUFACTURING INDUSTRY BY COMPANY SIZE

Key - Company Size:

•••••••••••• $0 - $199 million

━ ━ ━ ━ $200 - $999 million

━━━━━━ $1 billion and over

SOURCE: INPUT Annual Survey of EDP Managers

INPUT
UA82 MAP2

than $199 million). Most discrete manufacturing companies spend less than 1.5% of their total budget on EDP.

- SIC codes 34-38 (i.e., fabricated metal products, machinery except electrical, electric plus electronic equipment, transportation equipment, instruments and related products) have:

    - Sixty-six percent of total sector employment.

    - Seventy-six percent of shipment value.

    - Seventy-four percent of value added.

- Discrete manufacturing is resource intensive (which requires constant management attention to productivity aids, such as computers and automation in general) and deals with complex processes (requiring extensive planning, scheduling, tracking, and accounting). Market saturation for computers is not possible. To meet the constant challenge of improving productivity and competitive posture and to survive in severe economic conditions, constant upgrades of the computing capability are necessary.

- Exhibit VII-4 summarizes the processing services and integrated systems market forecasts. Discrete manufacturing is the single largest market for integrated systems, being slightly over twice as large as the nearest sector and growing faster than most of the other major markets.

D. PROCESS MANUFACTURING

- The process manufacturing sector has been a lucrative market for batch processing (second only to banking and finance), software products and remote computing services. It is also developing into a good integrated systems market for energy related applications.

INPU

EXHIBIT VII-4

PROCESSING SERVICES AND INTEGRATED SYSTEMS FORECAST – DISCRETE MANUFACTURING SECTOR, 1982–1987

SERVICE	AAGR 1982–1987 (percent)	USER EXPENDITURES IN CURRENT DOLLARS ($ millions)
Batch Processing	8%	494 / 741
Remote Computing	17	746 / 1,624
Processing FM	17	59 / 128
Integrated Systems	32	961 / 3,797

0   1,000   2,000   3,000 $4,000

Expenditures in 1982
Expenditures in 1987

- 93 -

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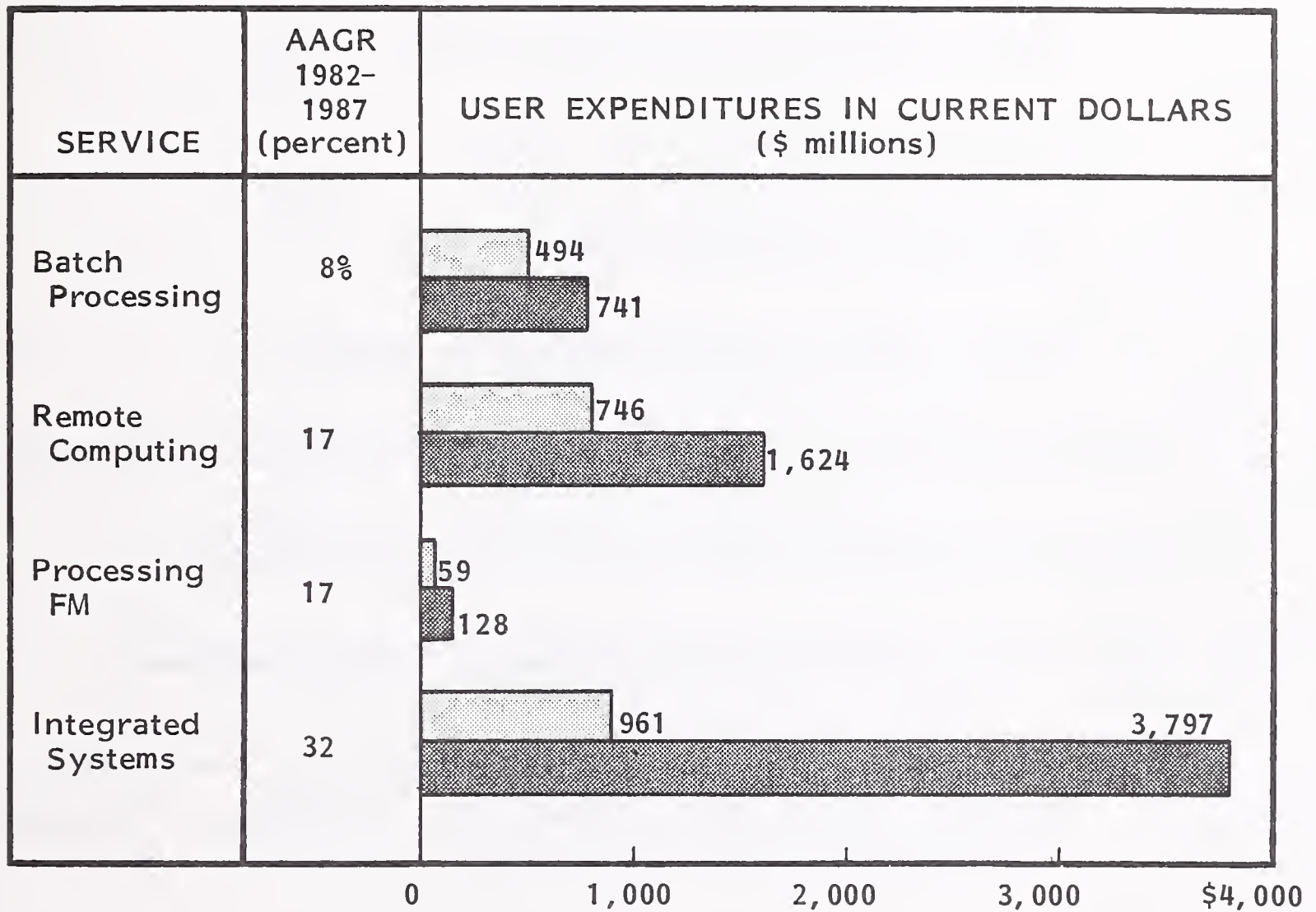
- Approximately 45% of shipments in this sector are energy related; information services markets in this sector are growing at a 26% AAGR, the second fastest growth area. Systems software products will grow faster in this sector than in any other as will function specific and industry specific remote computing.

- By 1987, $4 billion-plus information services markets will have developed in process manufacturing:

  - Industry specific batch services ($1.3 billion).

  - Systems software products ($2.1 billion).

  - Applications software products ($1.1 billion).

  - Industry specific integrated systems ($1.0 billion).

- Exhibit VII-5 provides the latest demographic data available on each subsector.

- Exhibit VII-6 relates EDP budget to total budget by size of company.

- The most significant underlying developments in this sector have been:

  - The sudden collapse of the petroleum industry's boom leading to dramatic reversals of the exploration, development, and processing markets (which looked so strong in 1981).

  - The strength of the chemical industry which is a prime U.S. exporter.

  - The continued deterioration of the mining, tobacco, textile, wood products, and primary metals industries.

  - The steady performance of the food products industry but with worsening margins.

INPL

EXHIBIT VII-5

PROCESS MANUFACTURING INDUSTRY SECTOR -
DEMOGRAPHIC DATA

STANDARD INDUSTRIAL CLASSIFI- CATION	INDUSTRY NAME	TYPE OF STATISTIC	DATA
All	Process Manufacturing	Number of Establishments Number of Employees	134,735 8.3 Million
10	Metal Mining	Value of Shipments (1977) Number of Establishments (1979) Number of Employees (1979)	$ 5.3 Billion 894 90,079
11	Anthracite Mining	Value of Shipments (l977) Number of Establishments (1979) Number of Employees (1979)	$226.0 Million 158 3,549
12	Coal Mining	Value of Shipments (1977) Number of Establishments (1979) Number of Employees (1979)	$ 16.6 Billion 4,013 257,559
13	Oil and Gas Extraction	Value of Shipments (1977) Number of Establishments (1979) Number of Employees (1979)	$ 66.4 Billion 16,220 390,506
20	Food Products	Value of Shipments (1978) Number of Establishments (1979) Number of Employees (1979)	$216.1 Billion 21,362 1.5 Million
21	Tobacco	Value of Shipments (1978) Number of Establishments (1979) Number of Employees (1979)	$ 10.0 Billion 202 59,258
22	Textile Products	Value of Shipments (1978) Number of Establishments (1979) Number of Employees (1979)	$ 42.3 Billion 6,442 868,507
24	Lumber and Wood Products	Value of Shipments (1978) Number of Establishments (1979) Number of Employees (1979)	$ 46.5 Billion 31,333 761,934

INPUT
MAS2 MAP2

EXHIBIT VII-5 (Cont.)

PROCESS MANUFACTURING INDUSTRY SECTOR –
DEMOGRAPHIC DATA

STANDARD INDUSTRIAL CLASSIFI- CATION	INDUSTRY NAME	TYPE OF STATISTIC	DATA
26	Paper Products	Value of Shipments (1978) Number of Establishments (1979) Number of Employees (1979)	$ 57.0 Billion 6,257 655,054
28	Chemicals	Value of Shipments (1980) Number of Establishments (1979) Number of Employees (1980)	$168.0 Billion 11,224 915,000
29	Petroleum	Value of Shipments (1978) Number of Establishments (1979) Number of Employees (1979)	$103.9 Billion 2,129 152,404
30	Rubber & Plastics	Value of Shipments (1978) Number of Establishments (1979) Number of Employees (1979)	$ 43.2 Billion 11,747 809,214
32	Stone, Glass, Clay	Value of Shipments (1978) Number of Establishments (1979) Number of Employees (1979)	$ 41.7 Billion 15,834 654,741
33	Primary Metals	Value of Shipments (1978) Number of Establishments (1979) Number of Employees (1979)	$118.1 Billion 6,920 1.2 Million

EXHIBIT VII-6

EDP BUDGET AS A PERCENT OF TOTAL BUDGET
IN THE PROCESS MANUFACTURING INDUSTRY BY COMPANY SIZE
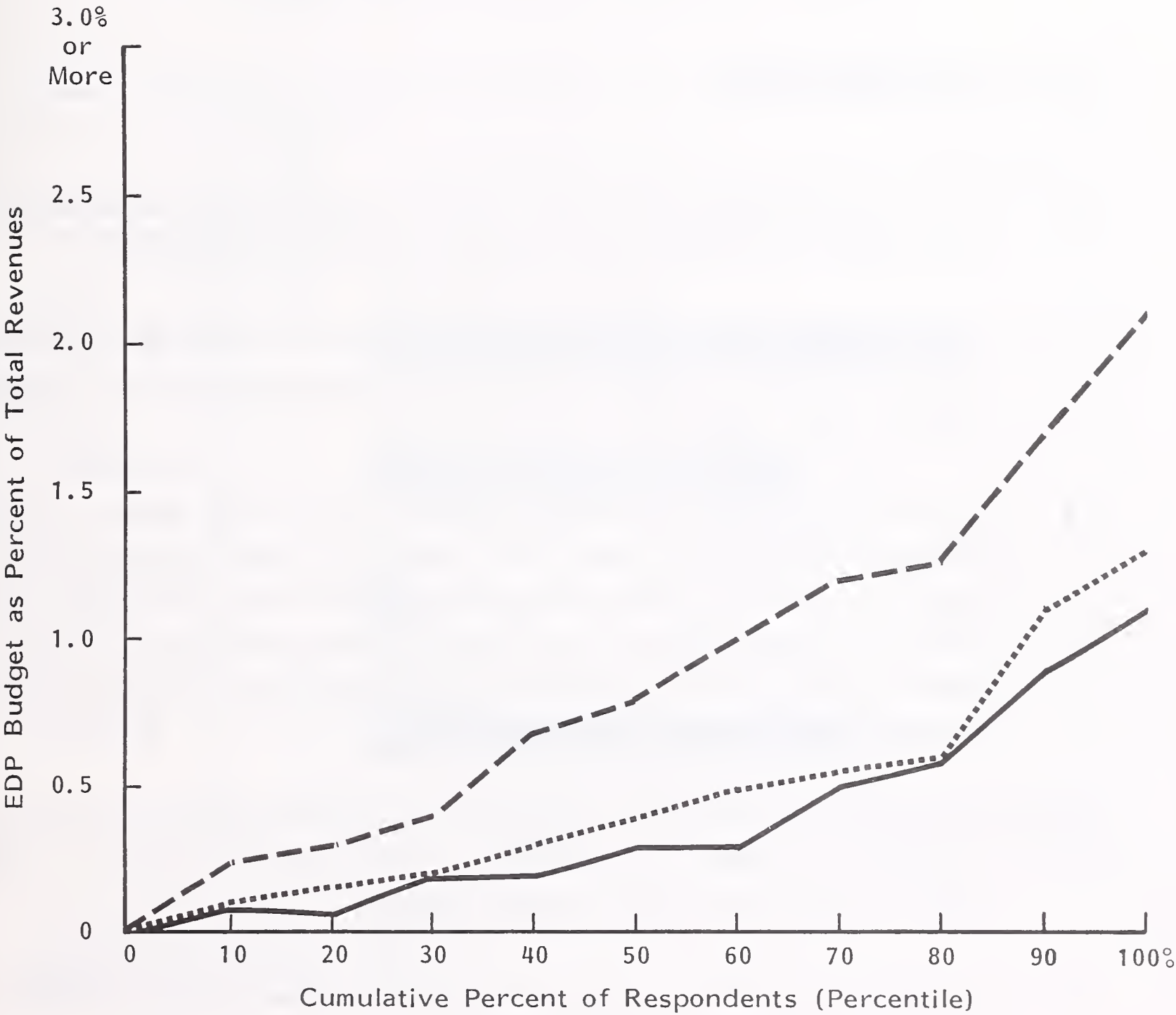
Key - Company Size:

················ $0 - $199 million   SOURCE: INPUT Annual Survey of EDP Managers

— — — — — $200 - $999 million

——————— $1 billion and over

INPUT
UA82 MAP2

- Exhibit VII-7 summarizes the processing services and integrated systems market forecasts in the process manufacturing market.

- Batch processing will remain the largest market over the forecast period, but the highest growth area is integrated systems, growing at a 29% AAGR.

E.   TRANSPORTATION

- The principal producer of revenue in this sector is the motor freight industry which accounts for approximately 51% of the total operating revenues.

- High fuel costs and a drop in demand have combined to weaken the infrastructure of the industry. In 1983, the likelihood of a gasoline tax will add a further burden to motor freight costs.

- In the airline industry, the second largest industry in the sector, a major bankruptcy (Braniff) and several near misses (e.g., World Airlines and Pan American) continued to shake the foundations of that area. As always in such situations, the most efficient and competitive of the airlines have continued to grow, while the structurally weaker ones have deteriorated. Pan American has less than a year to sort out its balance sheet.

- Paradoxically, as the major participants suffered, the number of new, smaller, local airlines increased - and flourished. These airlines have found a ready market for short route, cheap, specialized flights.

- Transportation services was the only industry to register a meaningful rise in activity, establishments, and employment.

- Freight forwarders, ticket offices, brokers, and packing and crating services were all good markets in the past year, and look resilient for the next five years.

INP

EXHIBIT VII-7

PROCESSING SERVICES AND INTEGRATED SYSTEMS FORECAST -
PROCESS MANUFACTURING SECTOR, 1982-1987

SERVICE	AAGR 1982-1987 (percent)	USER EXPENDITURES IN CURRENT DOLLARS ($ millions)
Batch Processing	18%	723 / 1,647
Remote Computing	19	485 / 1,173
Processing FM	17	42 / 92
Integrated Systems	29	383 / 1,360

0   500   1,000   1,500 $2,000

| | Expenditures in 1982 |
| | Expenditures in 1987 |

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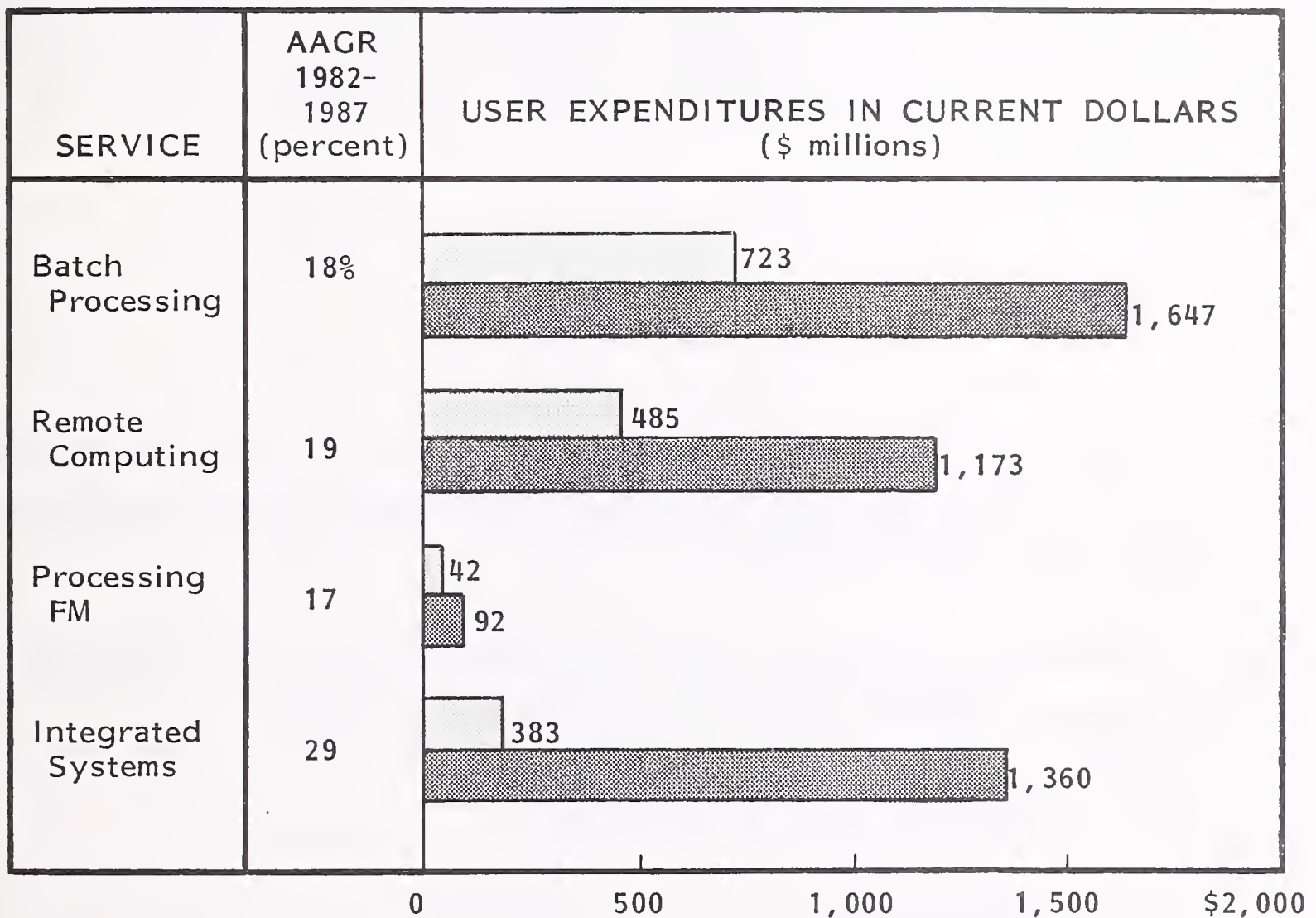
- Exhibit VII-8 provides the latest demographic data for each of the industries in the sector.

- Exhibit VII-9 relates EDP budget expenditures to total budget expenditures in the sector, by company size. The proportion is much lower than in most other sectors (between 0.1% and 0.5%, compared to 1% to 1.5% elsewhere).

- Exhibit VII-10 summarizes the processing services and integrated systems market forecasts for the industry. Integrated systems is a small opportunity, as is remote computing. However, much of the processing is done in-house in this industry.

F.   UTILITIES

- The utilities sector is a cross-section of very diverse businesses, business needs, and business conditions, ranging from electrical power generation to telephone communications.

- The largest component is the electric utility industry (with $82 billion in revenues in 1980) and it is faced with some severe problems:

  - Rising costs and reduced margins.

  - Sharp slowdown in the growth of demand.

  - Reduced bond ratings (due to the above) which closes off the principal source of new funds: the bond market.

- The most promising development has been reduced interest rates and the halt in the upward spiral of oil which fires many utilities.

INP

EXHIBIT VII-8

TRANSPORTATION INDUSTRY SECTOR -
DEMOGRAPHIC DATA

STANDARD INDUSTRIAL CLASSIFI- CATION	INDUSTRY NAME	TYPE OF STATISTIC	DATA
All	Transpor- tation	Operating Revenues Number of Establishments Number of Employees	$ 71.9 Billion 126,701 2.4 Million
41	Local and Suburban Transit	Operating Revenues (1978) Number of Establishments (1979) Number of Employees (1979)	$ 2.4 Billion 13,223 275,814
42	Motor Freight	Operating Revenues (1978) Number of Establishments (1979) Number of Employees (1979)	$ 36.5 Billion 79,049 1.3 Million
44	Water Transpor- tation	Operating Revenues (1978) Number of Establishments (1979) Number of Employees (1979)	$944.0 Million 6,635 216,287
45	Air Transpor- tation	Operating Revenues (1979) Number of Air Carriers (1979) Number of Employees (1979)	$ 27.1 Billion 6,023 418,949
46	Pipelines	Operating Revenues (1978) Number of Establishments (1979) Number of Employees (1979)	$ 4.9 Billion 522 18,051
47	Transpor- tation Services	Operating Revenues (1978) Number of Establishments (1979) Number of Employees (1979)	$ 68.8 Million 21,249 197,770

INPUT
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EXHIBIT VII-9

EDP BUDGET AS A PERCENT OF TOTAL BUDGET IN THE TRANSPORTATION INDUSTRY BY COMPANY SIZE

Cumulative Percent of Respondents (Percentile)
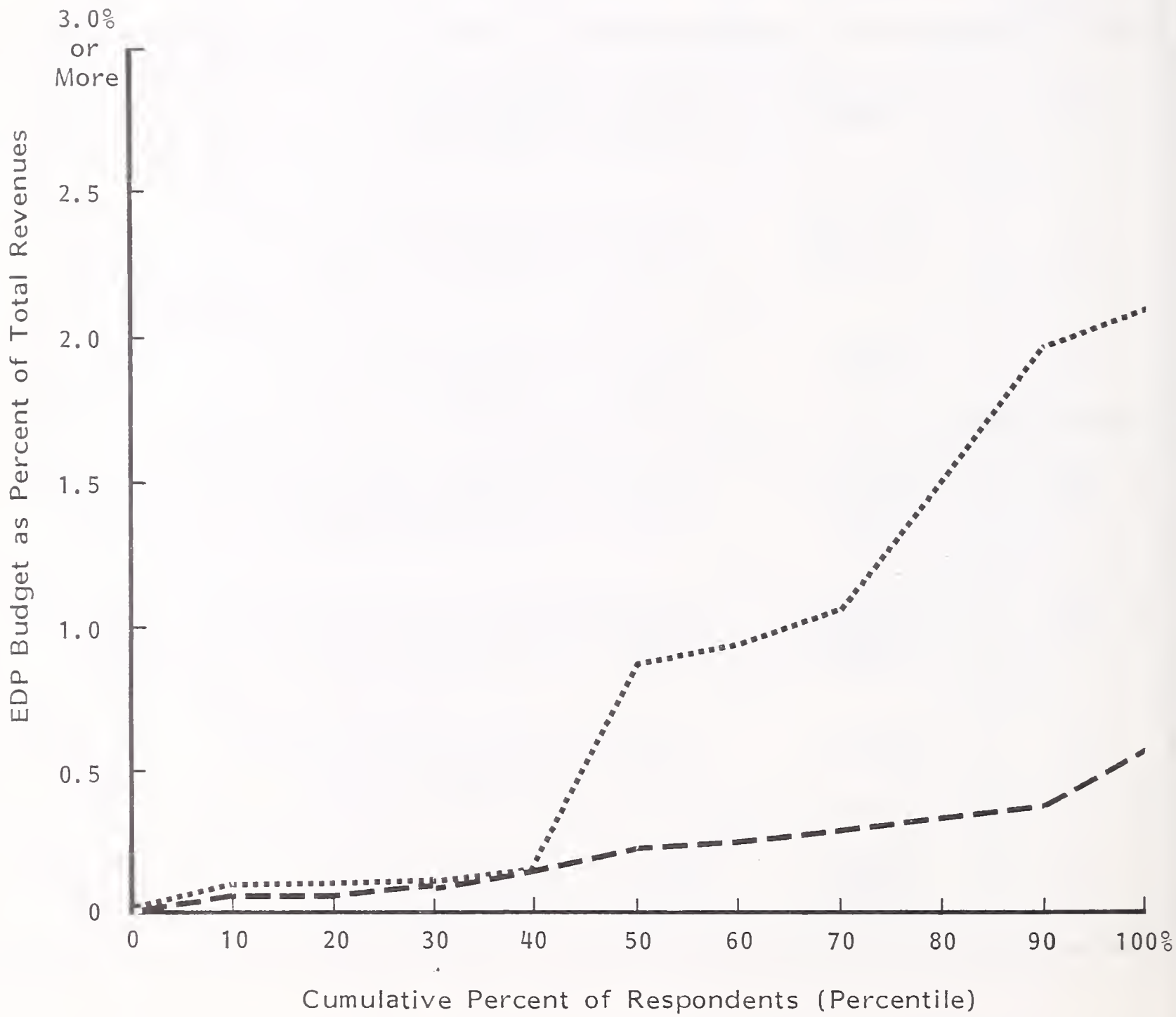
Key - Company Size:

·············· $0 - $199 million

━ ━ ━ ━ $200 million and over

SOURCE: INPUT Annual Survey of EDP Managers

INPU
UA82

EXHIBIT VII-10

PROCESSING SERVICES AND INTEGRATED SYSTEMS FORECAST - TRANSPORTATION SECTOR, 1982-1987

SERVICE	AAGR 1982-1987 (percent)	USER EXPENDITURES IN CURRENT DOLLARS ($ millions)
Batch Processing	8%	68 / 98
Remote Computing	16	129 / 275
Processing FM	11	29 / 49
Integrated Systems	22	147 / 390

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                0    100   200   300   400  $500
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	Expenditures in 1982
	Expenditures in 1987

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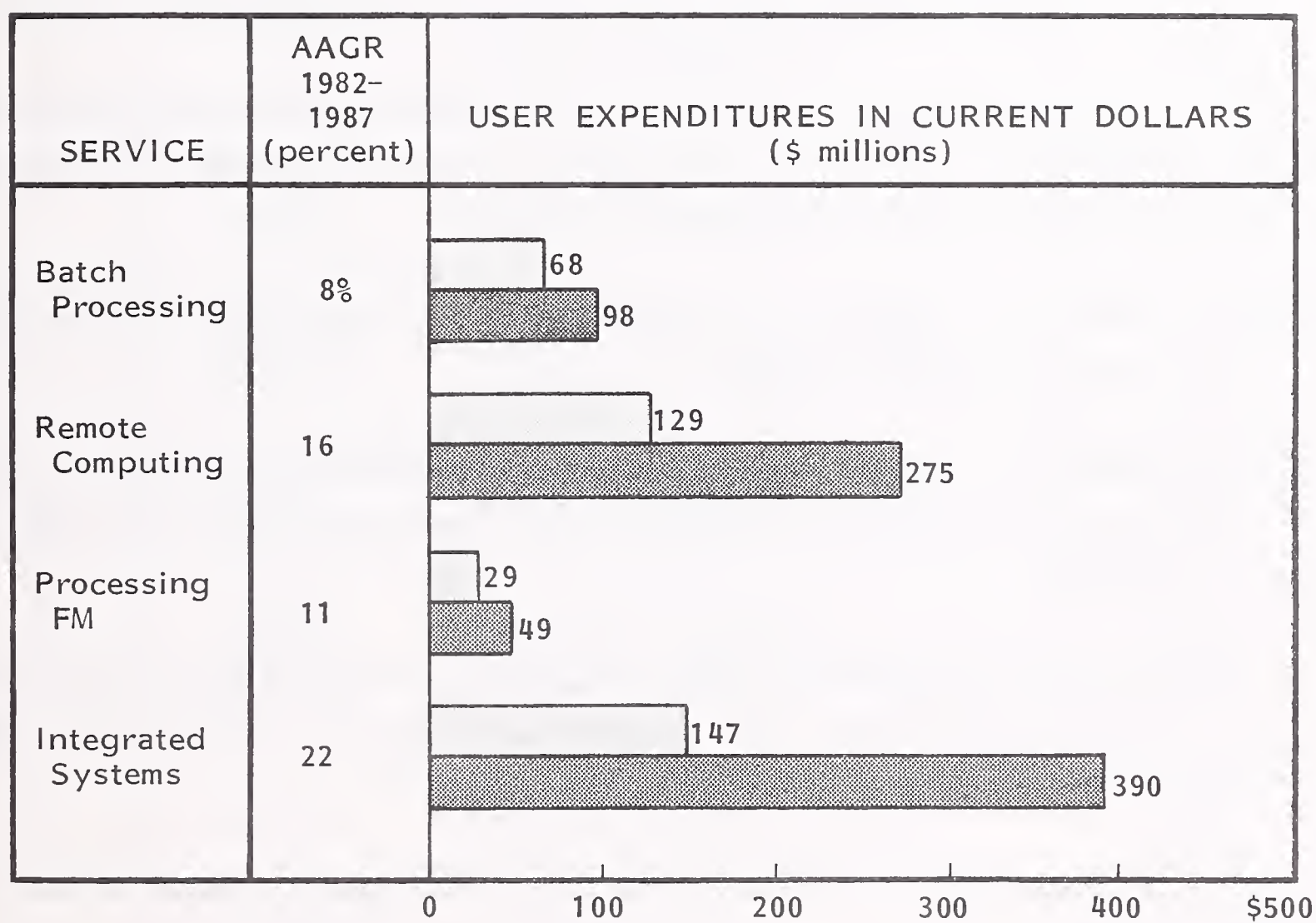
- The deregulation of gas prices has been a boon to natural gas utilities and has eased the burden of the combined gas/electric utility companies.

- The radio and TV broadcasting industry continues to expand.

    - Cable TV franchises are multiplying rapidly.

    - Radio stations continue to increase, particularly specialized stations.

- The telecommunications industry is a big growth area for the forecast period, offering good markets for specialized services (e.g., the directory assistance integrated systems sold by Computer Consoles).

- Exhibit VII-11 provides the latest demographic detail of the industries that make up the utilities sector.

- Exhibit VII-12 shows how EDP budget expenditures vary with respect to the total expense budget, by company size. Typically this ranges from 0.5% to 0.75%.

- The principal market by growth in this sector is turnkey systems, although it is a small business opportunity. By market size, such as it is, remote computing is the largest opportunity, as shown in Exhibit VII-13.

- A good market in this sector has been the use of financial planning software.

G. BANKING AND FINANCE

- The banking industry has undergone some significant changes in the last year, with many banks revising their attitudes toward information services:

INP

EXHIBIT VII-11

UTILITIES INDUSTRY SECTOR -
DEMOGRAPHIC DATA

STANDARD INDUSTRIAL CLASSIFI-CATION	INDUSTRY NAME	TYPE OF STATISTIC	DATA
All	Utilities	Number of Establishments Number of Employees	38,785 2 Million
481	Telephone Communi-cations	Operating Revenues (1979) Number of Companies (1979) Number of Employees (1979)	$ 55.7 Billion 13,389 1.0 Million
482	Telegraph Companies	Operating Revenues (1979) Number of Companies (1979) Number of Employees (1979)	$ 1.1 Billion 690 12,726
483	Radio and TV Broad-casting	Operating Revenues (1979) Number of Stations (1979) Number of Employees (1979)	$ 10.7 Billion 6,141 174,918
489	Communi-cations Services (N.E.C.)*	Operating Revenues Number of Establishments (1979) Number of Employees (1979)	– 3,166 54,579
491	Electric Services	Revenues (1980) Number of Plants (1979) Number of Employees (1979)	$ 82.0 Billion 4,471 360,700
492	Gas Products & Services	Revenues (1979) Number of Establishments (1979) Number of Employees (1979)	$ 39.4 Billion 2,922 128,578
493	Combined Gas and Electric	Operating Revenues Number of Establishments (1979) Number of Employees (1979)	– 946 160,968
494	Water Supply	Operating Revenues Number of Establishments (1979) Number of Employees (1979)	– 2,933 21,374

* Not elsewhere classified

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EXHIBIT VII-11 (Cont.)

UTILITIES INDUSTRY SECTOR -
DEMOGRAPHIC DATA

STANDARD INDUSTRIAL CLASSIFI- CATION	INDUSTRY NAME	TYPE OF STATISTIC	DATA
495	Sanitary Services	Operating Revenues Number of Establishments (1979) Number of Employees (1979)	– 3,760 49,597
496	Steam Supply	Operating Revenues Number of Establishments (1979) Number of Employees (1979)	– 57 2,579
497	Irrigation Systems	Operating Revenues Number of Establishments (1979) Number of Employees (1979)	– 310 1,967

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EXHIBIT VII-12

EDP BUDGET AS A PERCENT OF TOTAL BUDGET IN
UTILITY INDUSTRY BY COMPANY SIZE
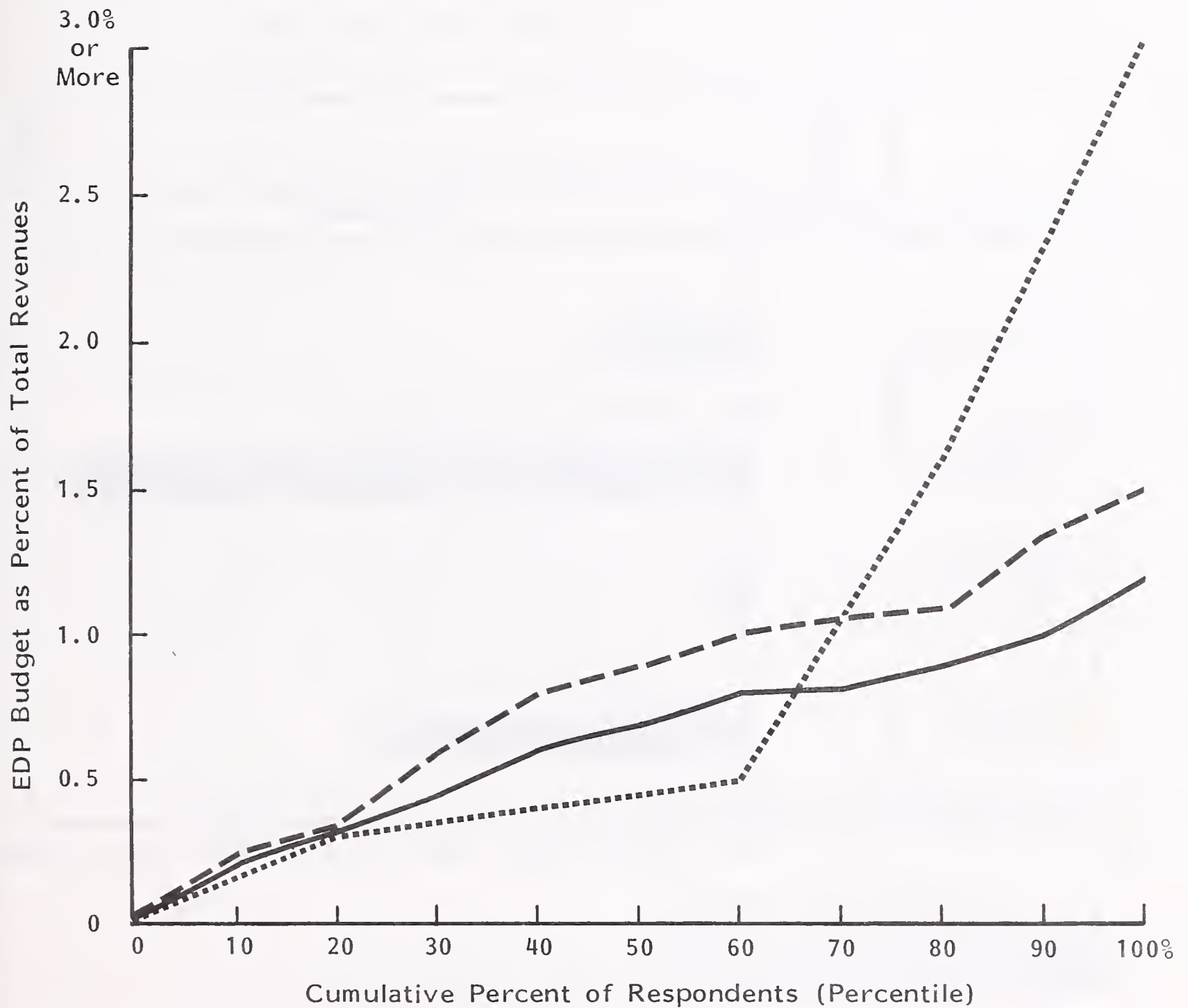
Key - Company Size:

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••••••••••••  $0 - $199 million
– – – – – –  $200 - $999 million
————————  $1 billion and over
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SOURCE: INPUT Annual Survey of EDP Managers

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UA82 MAP2

EXHIBIT VII-13

PROCESSING SERVICES AND INTEGRATED SYSTEMS FORECAST-
UTILITIES SECTOR, 1982-1987

SERVICE	AAGR 1982- 1987 (percent)	USER EXPENDITURES IN CURRENT DOLLARS ($ millions)
Batch Processing	8%	84 / 120
Remote Computing	14	332 / 642
Processing FM	8	12 / 18
Integrated Systems	23	120 / 333

0   100   200   300   400   500   600 $700

	Expenditures in 1982
	Expenditures in 1987

INP
MAP2
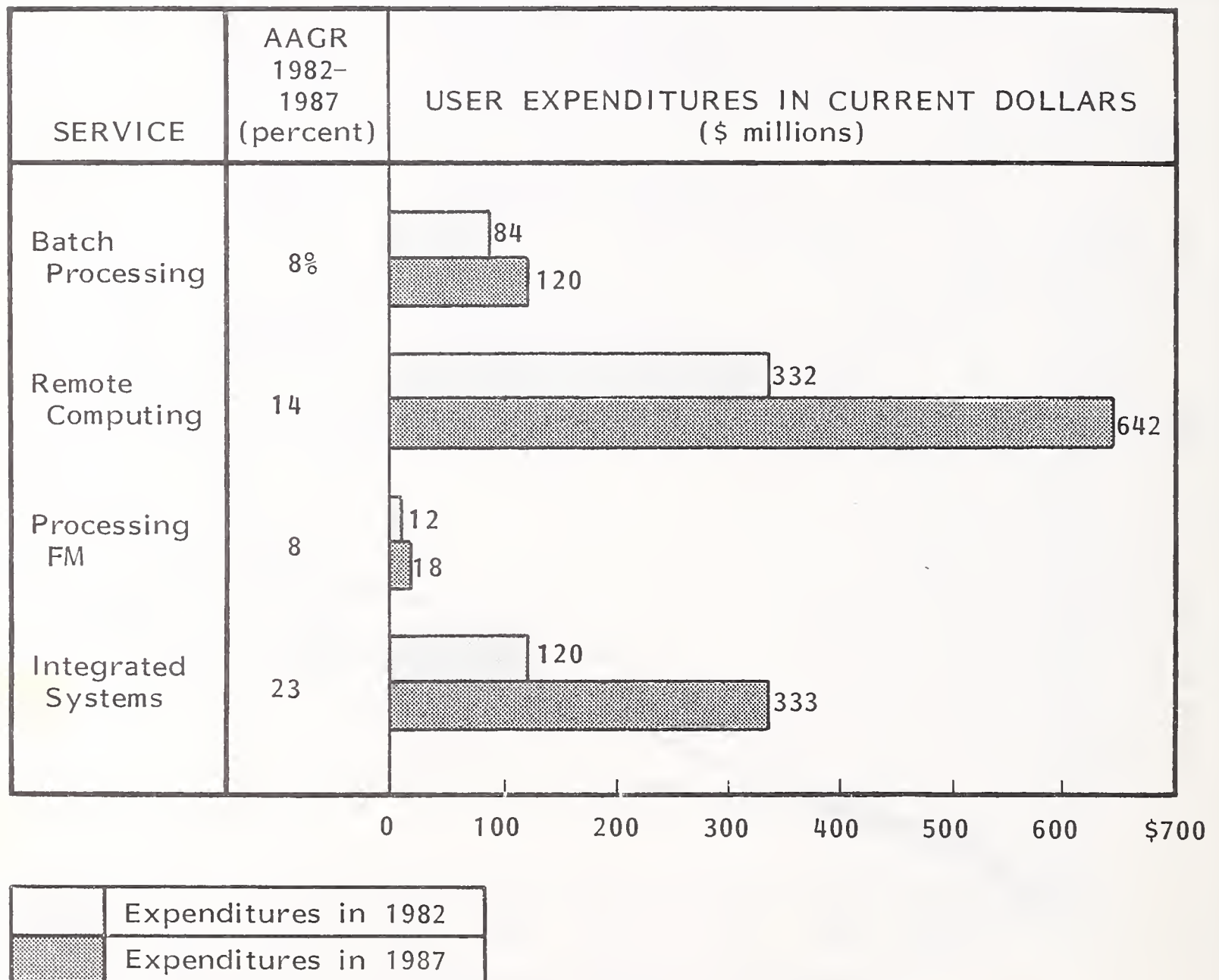
- Wells Fargo and Crocker Bank transferred automated teller processing in-house.

- Mellon Bank became a wholesaler of correspondent banking processing to a number of smaller banks each of which can resell the service.

- Single banking applications are becoming markets in their own right: cash management, trust services, financial modeling, loan processing, etc.

- Swift changes in regulatory constraints and readily available technology (both software and hardware) are encouraging banks to become more aggressive and forward thinking.

- In many instances they have no choice. Enhanced competition, reduced profits and unexpected challenges from nonbanking origins (e.g., Merrill Lynch and the money market fund) have propelled banks into making rapid changes.

- In the finance sector, the security and commodity brokers have suddenly had to deal with transaction volumes that are two and three times the size of normal. It is a credit to the automation of transaction handling that such an event did not swamp the system.

- Behind these changes, the driving force is to have greater applications integration and more on-line, user friendly systems. An instance of integration is Anacomp's continuous integrated system that posts transactions as they occur.

- Exhibit VII-14 provides the most recent demographic data on the industry sectors that make up this sector.

- The proportion of total budget spent in EDP, by company size, is shown in Exhibit VII-15. It varies from 0.1% to 0.5%.
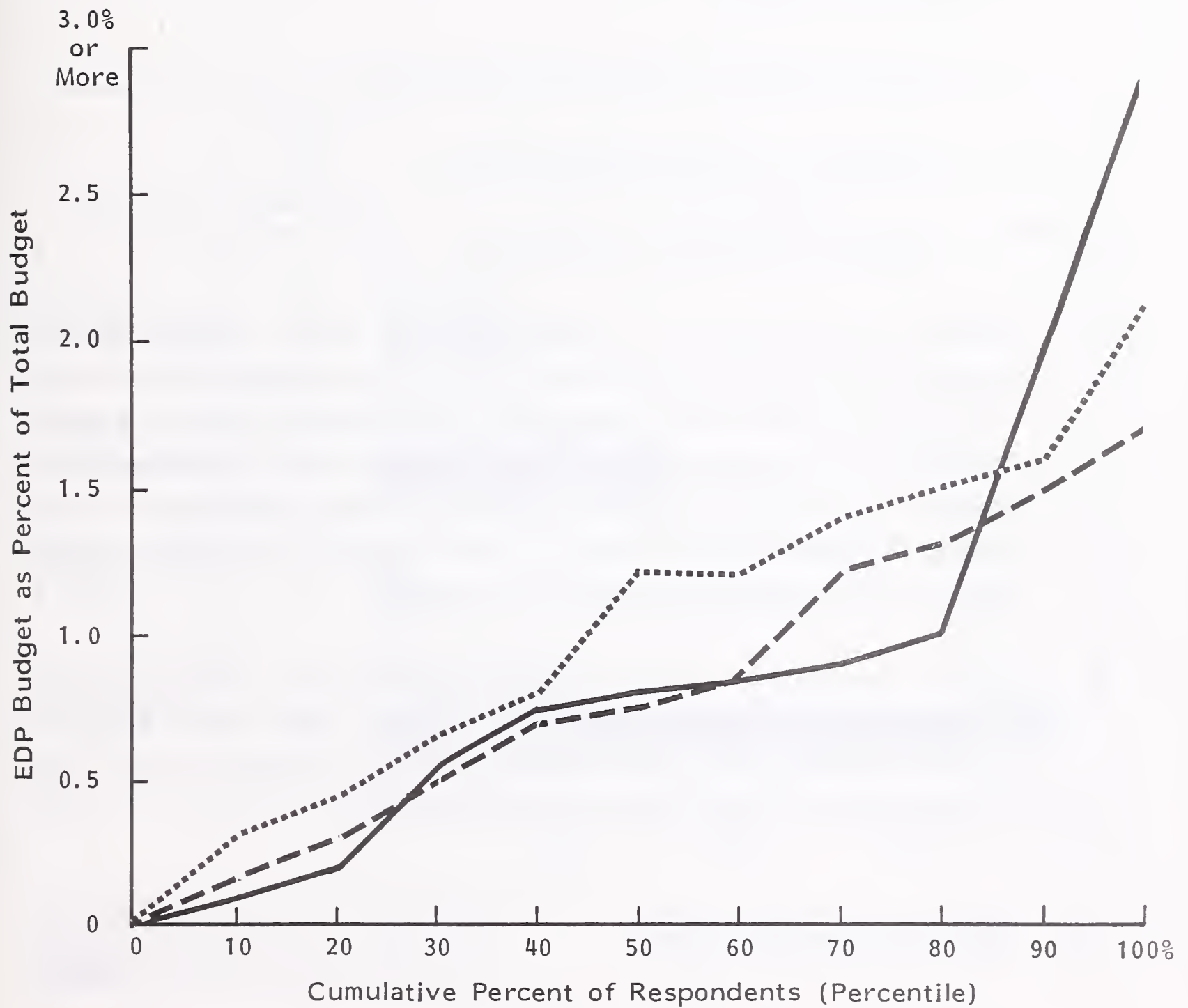
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EXHIBIT VII-14

BANKING AND FINANCE INDUSTRY SECTOR -
DEMOGRAPHIC DATA

STANDARD INDUSTRIAL CLASSIFI- CATION	INDUSTRY NAME	TYPE OF STATISTIC	DATA
All	Banking and Finance	Number of Establishments Number of Employees	130,315 2.7 Million
60	Banks (Total)	Number of Establishments (1979) Number of Employees (1979)	18,714 1.4 Million
601	Federal Reserve Banks	Assets (1980) Number of Banks (1979) Number of Employees (1979)	$ 168.5 Billion 44 20,352
602	Commercial Banks	Assets (1980) Deposits (1980) Number of Banks (1980) Number of Employees (1979)	$1,543.5 Billion $1,194.0 Billion 14,870 1.3 Million
603	Mutual Savings Banks	Assets (1980) Deposits (1980) Number of Banks (1979) Number of Employees (1979)	$ 166.6 Billion $ 149.9 Billion 2,130 57,116
604/605	Trust Companies and Other Functions	Assets Number of Establishments (1979) Number of Employees (1979)	– 1,670 28,422
61	Credit Agencies (Total)	Assets Number of Companies (1979) Number of Employees (1979)	– 87,936 910,964
611	Rediscount and Financing Institutions	Assets Number of Establishments (1979) Number of Employees (1979)	– 63 1,143
612	Savings and Loan Associations	Assets (1980) Number of Associations (1980) Number of Employees (1980)	$ 630.0 Billion 4,613 224,164

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EXHIBIT VII-14 (Cont.)

BANKING AND FINANCE INDUSTRY SECTOR –
DEMOGRAPHIC DATA

STANDARD INDUSTRIAL CLASSIFICATION	INDUSTRY NAME	TYPE OF STATISTIC	DATA
613	Agricultural Credit Institutions	Assets Number of Establishments (1979) Number of Employees (1979)	– 1,353 15,191
614	Credit Unions	Assets (1978) Number of Credit Unions (1979) Number of Employees (1979)	$ 62.6 Billion 37,478 215,927
615	Business Credit Institutions	Assets Number of Establishments (1979) Number of Employees (1979)	– 2,430 48,902
616	Mortgage Bankers & Brokers	Value of Mortgage Originations (1978) Number of Firms (1979) Number of Employees (1979)	$104 Billion 4,521 61,191
62	Security & Commodity Brokers	Total Capitalization (1978) Number of Companies (1979) Number of Employees (1979)	$ 5.7 Billion 10,486 199,937
67	Holding and Other Investment Companies	Number of Establishments (1979) Number of Employees (1979)	13,179 144,509

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MAS2 MAP2

EXHIBIT VII-15

EDP BUDGET AS A PERCENT OF TOTAL BUDGET IN THE
BANKING AND FINANCE INDUSTRY BY COMPANY SIZE
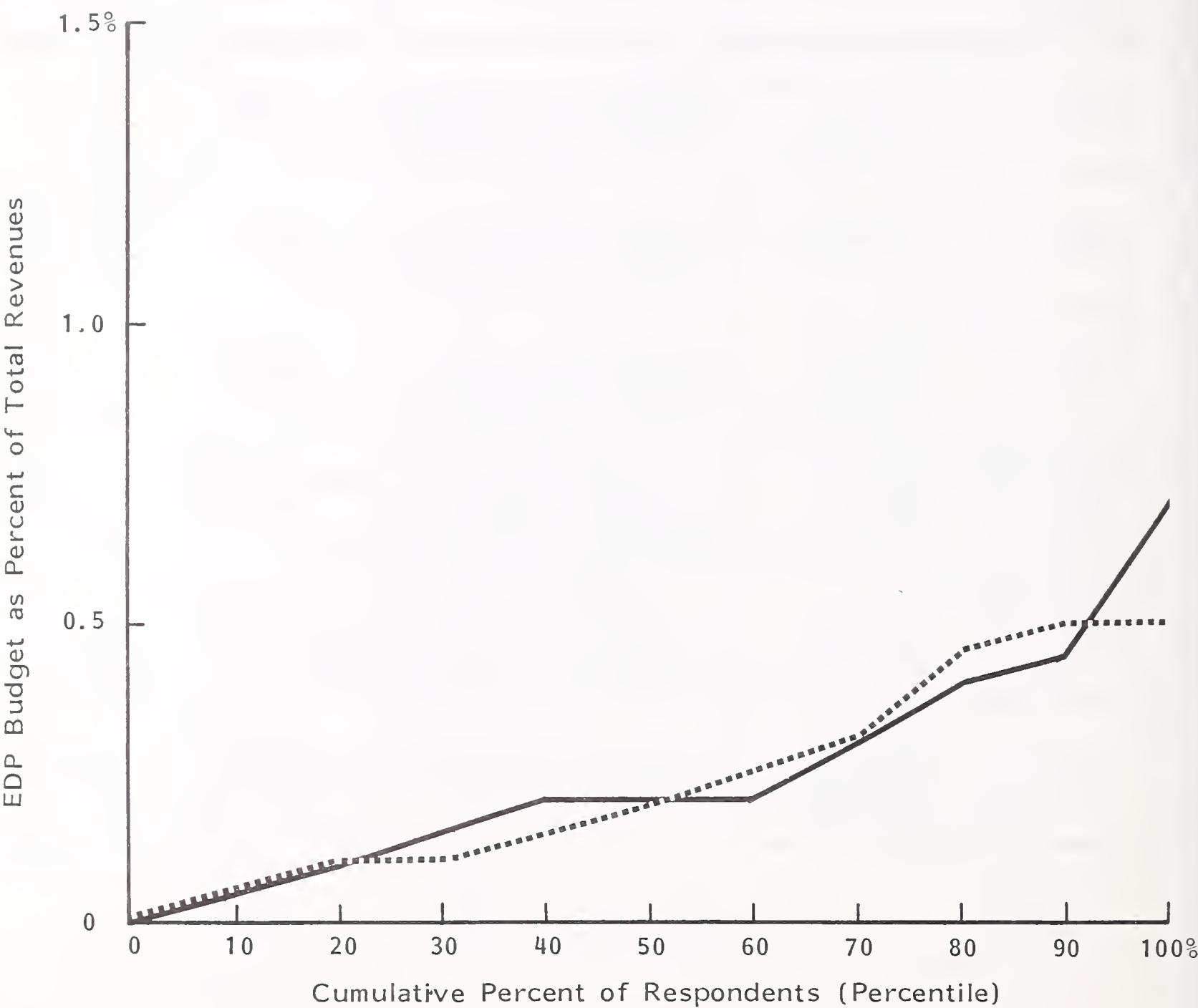
Key - Company Size (Assets):

••••••••••••• Under $1 billion

━━━━━━━ $1 billion and over

SOURCE: INPUT Annual Survey of EDP Managers

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- A comparison of the information processing markets in banking and finance is given in Exhibit VII-16. Remote computing is expected to grow by 20% to $2.9 billion by 1987. Integrated systems will have the greatest growth from less than $0.5 billion to $1.8 billion by 1987.

H. INSURANCE

- While the rest of the economy sputtered, insurance markets continued to thrive. Information services performed only moderately well, however, despite the strong sales of software products.

- The property/casualty market was particularly good to companies such as Policy Management Systems, the leading software package vendor in the maintenance industry.

- The largest processing services market is government funded health insurance such as Medicaid and Medicare. The majority of this business will be obtained through processing facilities management.

- The larger companies continue to bring processing in-house, which effectively siphons off revenues that would otherwise accrue to processing services vendors.

- Exhibit VII-17 provides the most recent demographic data on each industry that takes part in this sector.

- Exhibit VII-18 shows the relationship between the number of employees in a given company and the EDP dollars spent. This ranges from $200 to $4,400 with a median value of $2,800.

- Exhibit VII-19 summarizes the processing services and integrated systems market forecasts to 1987, and shows the predominance of processing facilities

INPUT

EXHIBIT VII-16

PROCESSING SERVICES AND INTEGRATED SYSTEMS FORECAST - BANKING AND FINANCE SECTOR, 1982-1987

SERVICE	AAGR 1982– 1987 (percent)	USER EXPENDITURES IN CURRENT DOLLARS ($ millions)
Batch Processing	7%	949 / 1,328
Remote Computing	20	1,141 / 2,860
Processing FM	18	615 / 1,392
Integrated Systems	30	478 / 1,751

0   1,000   2,000   3,000 $4,000

	Expenditures in 1982
	Expenditures in 1987

INP
MAP
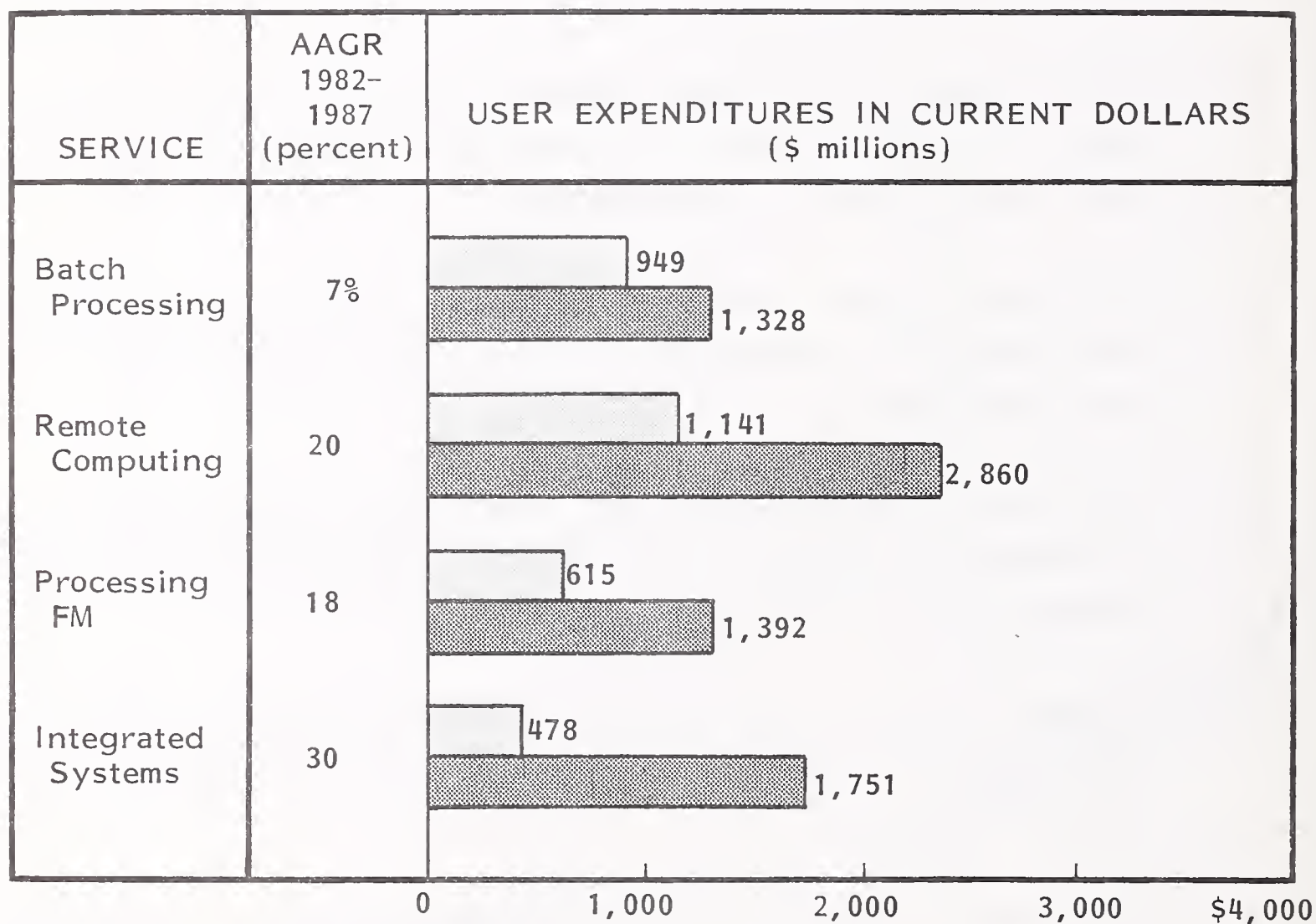
EXHIBIT VII-17

INSURANCE INDUSTRY SECTOR -
DEMOGRAPHIC DATA

STANDARD INDUSTRIAL CLASSIFI-CATION	INDUSTRY NAME	TYPE OF STATISTIC	DATA
All	Insurance	Number of Establishments Number of Employees	111,482 1.7 Million
631	Life Insurance	Premium Receipts (1980) Number of Corporate Groups (1978) Number of Establishments (1979) Number of Employees (1980)	$ 94.2 Billion 1,824 15,848 540,000
632	Medical and Health Insurance	Premium Receipts (1979) Number of Establishments (1979) Number of Employees (1979)	$ 55.8 Billion 1,532 111,730
633	Fire, Marine and Casualty Insurance	Premium Receipts (1978) Number of Establishments (1979) Number of Corporate Groups (1978) Number of Employees (1979)	$ 81.7 Billion 9,335 - 444,459
635	Surety Insurance	Premium Receipts (1978) Number of Establishments (1979) Number of Employees (1979)	$835.8 Million 448 8,418
636	Title Insurance	Premiums Written Number of Establishments (1979) Number of Employees (1979)	- 2,518 52,075
637	Pension, Health and Welfare Funds	Premiums Written-Amount in Force Number of Establishments (1979) Number of Employees (1979)	- 3,297 44,982
639	Insurance Carriers (N.E.C.)*	Premiums Written Number of Establishments (1979) Number of Employees (1979)	- 170 3,383
64	Insurance Agents, Brokers and Services	Operating Revenues (1979) Number of Establishments (1979) Number of Employees (1979)	$ 20.7 Billion 78,334 450,700

* Not elsewhere classified

- 115 -

INPUT
MAS2 MAP2

EXHIBIT VII-18

EDP SPENDING PER EMPLOYEE BY COMPANY SIZE
IN THE INSURANCE INDUSTRY

EDP Spending per Employee

($ thousands)

▬ ▬ ▬ ▬ = Median
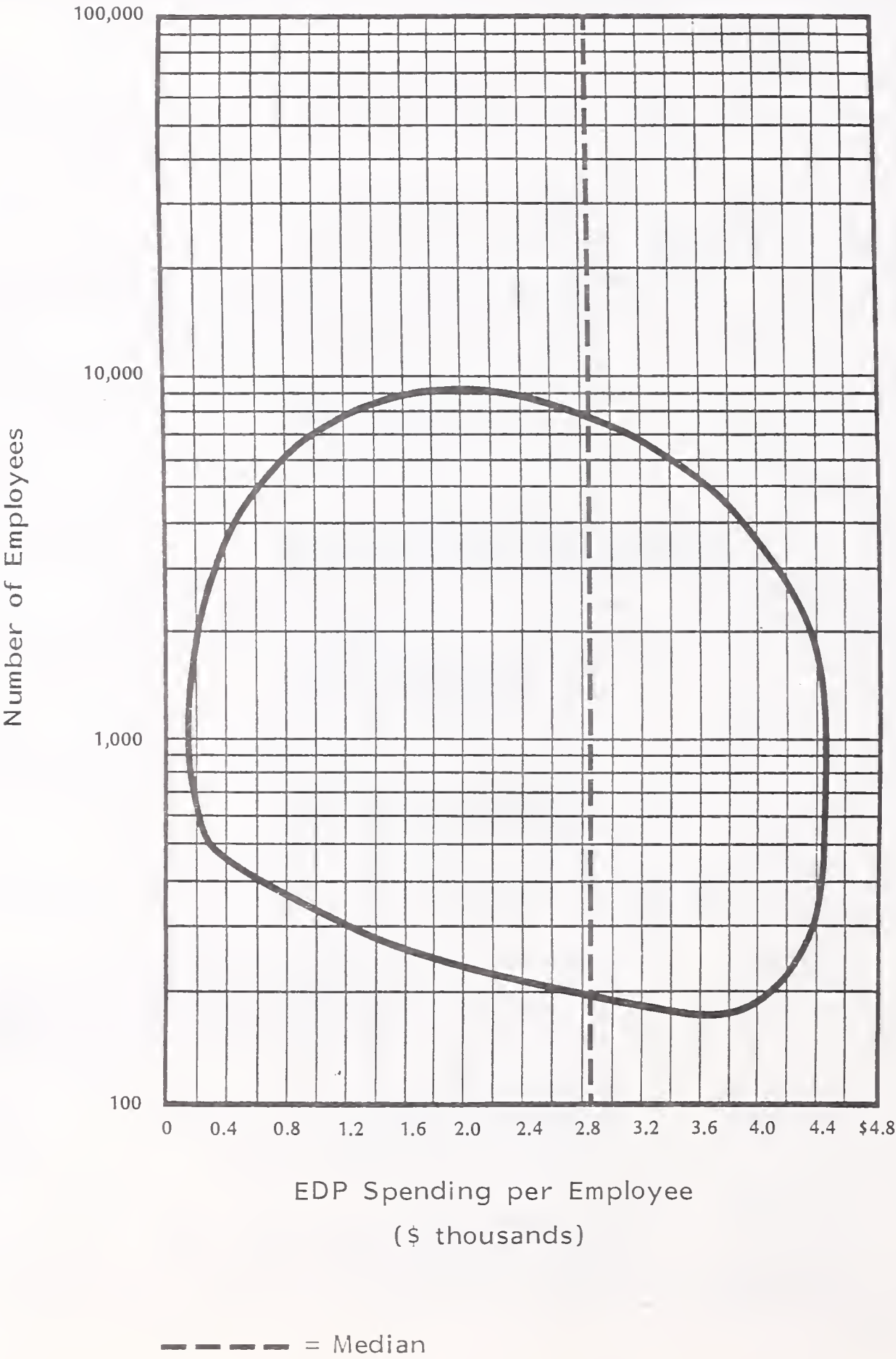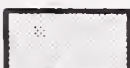
EXHIBIT VII-19

PROCESSING SERVICES AND INTEGRATED SYSTEMS FORECAST -
INSURANCE SECTOR, 1982-1987

SERVICE	AAGR 1982-1987 (percent)	USER EXPENDITURES IN CURRENT DOLLARS ($ millions)
Batch Processing	7%	148 / 206
Remote Computing	15	238 / 484
Processing FM	16	303 / 629
Integrated Systems	24	201 / 590

0   100   200   300   400   500   600 $700

	Expenditures in 1982
	Expenditures in 1987

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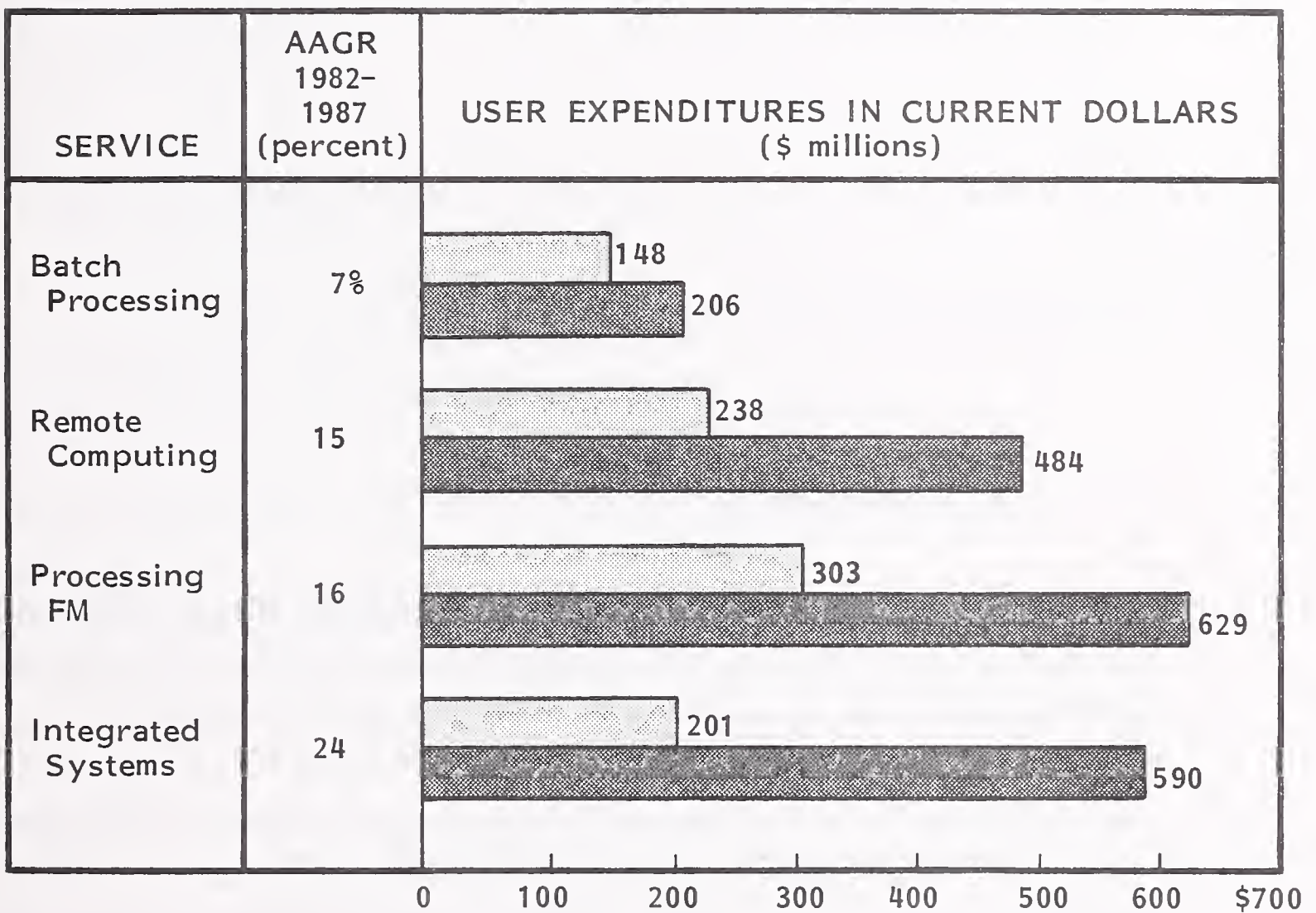
management. The growth area is integrated systems, however, with a 24% AAGR. Both markets will exceed $0.5 billion by 1987.

I. MEDICAL

• The most recession-resistant of all the sectors, the health care industry is a strong market for all the information services. Growth rates through 1987 are expected to exceed 20% for all but batch processing, and 30% for integrated systems and software products. If it were not for a weak batch services market, the health care sector would be the fastest growing market of all.

• Two new segments are helping to sustain the growth:

    - Small medical group practices.

    - Independent physicians.

• Both can now afford a small integrated system capable of basic patient data, accounting, and medical insurance claims processing for as little as $15,000. Omni American and Sequoia Group Inc. have done well in this area.

• The traditional RCS and integrated systems market is the acute care hospital sector that Shared Medical Systems and McAuto have targeted. This also remained strong in 1982 but some questions are being raised as to the impact that the planned overhaul of Medicare, now being considered by Congress, will do to the market.

• One possibility is that ancillary hospital costs, which account for 60% of reimbursed expenses, would be brought under the same "ceiling" controls that apply to routine costs. Another is to limit each hospital each year to 110% of expenses from the previous year. Both would severely impact the market which has seen expenditures rising by 35% to 40% each year.

INP

- Exhibit VII-20 provides the latest demographic data available on the industry's subsectors.

- Exhibit VII-21 summarizes the processing and integrated systems market forecasts through 1987. RCS, processing FM, and integrated systems are all strong markets, particularly the latter.

J.   EDUCATION

- The poorest information services market of all, education, is unlikely to improve significantly other than in the software products area (where growth is expected to be at 24% AAGR for applications software products) and integrated systems (where both industry specific and cross industry systems are expected to grow by 18% to 19%).

- The market is small and surprisingly well penetrated:

  - Nearly 60% of senior high schools use computer-assisted instruction (CAI).

  - Forty percent of junior high schools use CAI.

  - Twenty percent of elementary schools use CAI.

- In addition, the total school market is shrinking and will continue to do so throughout the forecast period. In fact, the contraction is not expected to end before 1986. Funds are being cut, enrollments are falling, and grants are diminishing.

- In higher education, courseware for personal computers will be an opportunity. The widespread use of these systems will create opportunities for software distribution. Several universities have announced that all incoming freshmen

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INPUT

EXHIBIT VII-20

MEDICAL INDUSTRY SECTOR -

DEMOGRAPHIC DATA

STANDARD INDUSTRIAL CLASSIFI- CATION	INDUSTRY NAME	TYPE OF STATISTIC	DATA
All	Medical	Health Expenditures Number of Establishments Number of Employees	148.1 Billion 593,383 5.0 Million
801	Physicians	Health Expenditures (1980) Number of Establishments (1979) Number of Employees (1979)	$ 46.6 Billion 140,130 716,739
802	Dentists	Health Expenditures (1980) Number of Establishments (1979) Number of Employees (1979)	$ 15.6 Billion 83,891 341,771
803	Osteopaths	Receipts (1977) Number of Establishments (1979) Number of Employees (1979)	$776.3 Million 5,293 23,510
804	Health Practitioners (N.E.C.)*	Health Expenditures (1977) Number of Establishments (1979) Number of Employees (1979)	$ 2.2 Billion 28,291 86,400
805	Nursing Homes	Health Expenditures (1979) Number of Establishments (1979) Number of Employees (1979)	$ ·17.8 Billion 12,707 979,844
806	Hospitals	Health Expenditures (1979) Number of Establishments (1979) Number of Employees (1979)	$ 99.6 Billion 5,230 2.6 Million
807	Medical and Dental Laboratories	Health Expenditures (1977) Number of Establishments (1979) Number of Employees (1979)	$ 2.1 Billion 10,720 98,589
808	Outpatient Care Facilities	Health Expenditures (1977) Number of Establishments (1979) Number of Employees (1979)	$ 1.8 Billion 4,467 60,432

* Not elsewhere classified

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EXHIBIT VII-20 (Cont.)

MEDICAL INDUSTRY SECTOR -
DEMOGRAPHIC DATA

STANDARD INDUSTRIAL CLASSIFI- CATION	INDUSTRY NAME	TYPE OF STATISTIC	DATA
809	Health and Allied Services (N.E.C.) *	Health Expenditures (1977) Number of Establishments (1979) Number of Employees (1979)	$ 3.6 Billion 3,276 97,184

* Not elsewhere classified

INPUT
MAS2 MAP2

EXHIBIT VII-21

PROCESSING SERVICES AND INTEGRATED SYSTEMS FORECAST - MEDICAL SECTOR, 1982-1987

SERVICE	AAGR 1982- 1987 (percent)	USER EXPENDITURES IN CURRENT DOLLARS ($ millions)
Batch Processing	9%	249 / 383
Remote Computing	20	249 / 619
Processing FM	22	256 / 685
Integrated Systems	30	218 / 638

0   100   200   300   400   500   600 $700

	Expenditures in 1982
	Expenditures in 1987

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MAP2
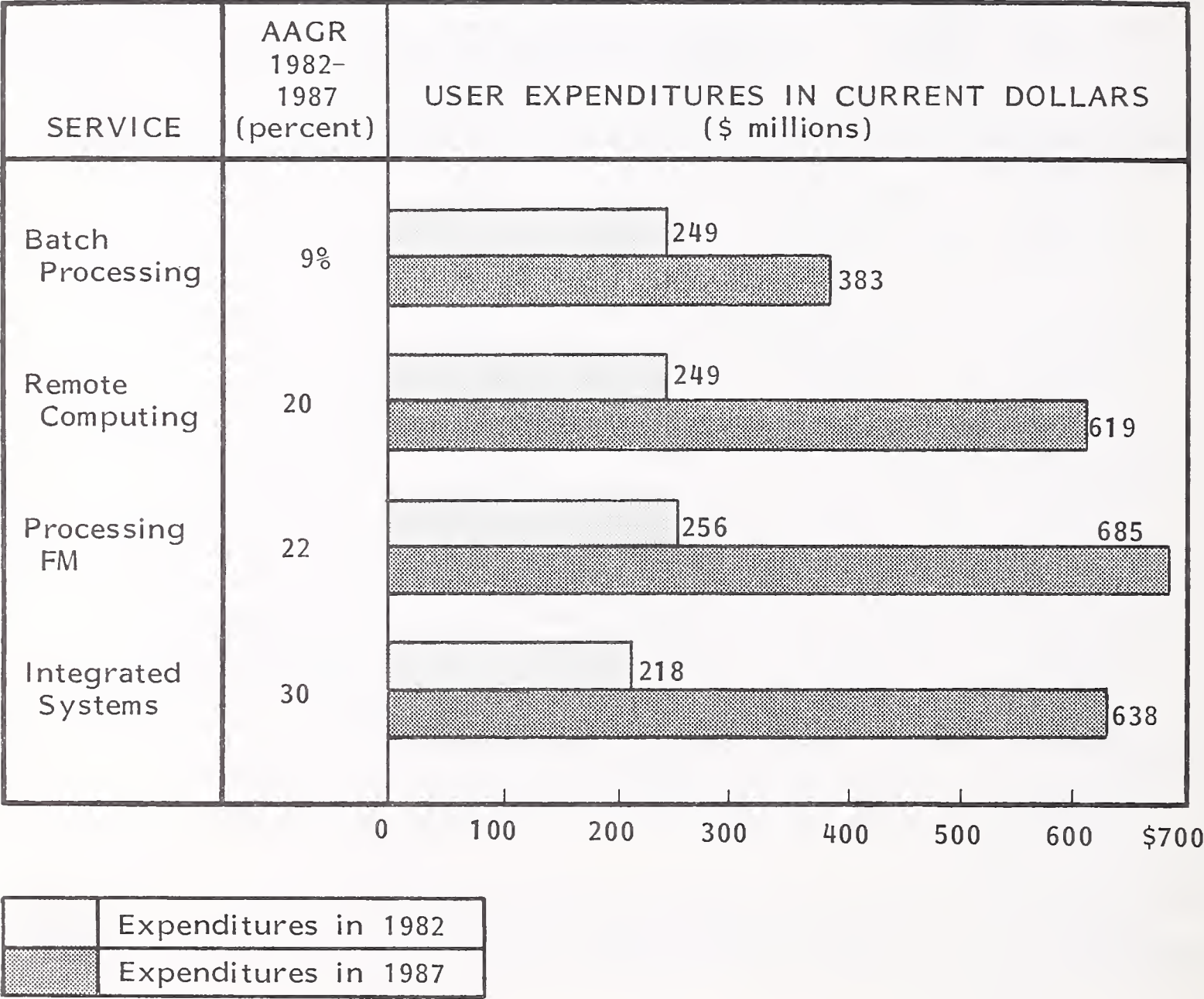
will receive a personal computer at enrollment and this will become a major trend.

- Exhibit VII-22 provides the latest demographic data on the industry subsectors that make up the sector.

- The best market remains integrated systems, as shown in Exhibit VII-23.

K.   RETAIL DISTRIBUTION

- The pyramid of retail establishments is a strange one:

    - There are just over 500 companies with more than 1,000 employees.

    - There are slightly more than 8,000 retail companies with more than 100 employees.

    - There are over a million companies with fewer than 100 employees.

- This rapid expansion of the prospect base, as the cost of computing has come down, is responsible for the growing interest that information services vendors are showing in this sector. Point of sale (POS) terminals and electronic cash registers (ECR) have been a relatively successful market for equipment vendors, (for some only - others have burned their fingers). As yet the only major successful retail information services market has been automobile dealerships.

- Three major companies have been successful in this subsector, mainly through remote computing services and integrated systems:

    - Reynolds and Reynolds (the number one supplier).

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EXHIBIT VII-22

EDUCATION INDUSTRY SECTOR -
DEMOGRAPHIC DATA

STANDARD INDUSTRIAL CLASSIFI- CATION	INDUSTRY NAME	TYPE OF STATISTIC	DATA
All	Education	Expenditures (1979) Number of Establishments (1979) Number of Employees (1979)	$154.3 Billion 122,482 1.2 Million
821	Elementary and Secondary	Expenditures (1979) Number of Schools (1979) Number of Employees (1979)	$ 98.0 Billion 110,500 301,906
822	Higher Education	Expenditures (1979) Number of Colleges (1979) Number of Employees (1979)	$ 54.2 Billion 2,871 794,468
823	Libraries and Similar	Expenditures (1979) Number of Establishments (1979) Number of Employees (1979)	$188.3 Million 1,332 13,242
824	Corres- pondence and Vocational	Expenditures (1977) Number of Establishments (1979) Number of Employees (1979)	$ 1.0 Billion 2,820 46,171
829	Schools and Educational Services (N.E.C.)*	Expenditures (1977) Number of Establishments (1979) Number of Employees (1979)	$895.2 Million 4,959 60,923

* Not elsewhere classified

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EXHIBIT VII-23

PROCESSING SERVICES AND INTEGRATED SYSTEMS FORECAST -
EDUCATION SECTOR, 1982-1987

SERVICE	AAGR 1982-1987 (percent)	USER EXPENDITURES IN CURRENT DOLLARS ($ millions)
Batch Processing	4%	67 / 81
Remote Computing	7	59 / 83
Processing FM	14	19 / 38
Integrated Systems	19	74 / 176

0   50   100   150 $200

Expenditures in 1982
Expenditures in 1987

- 125 -

INPUT
MAP2
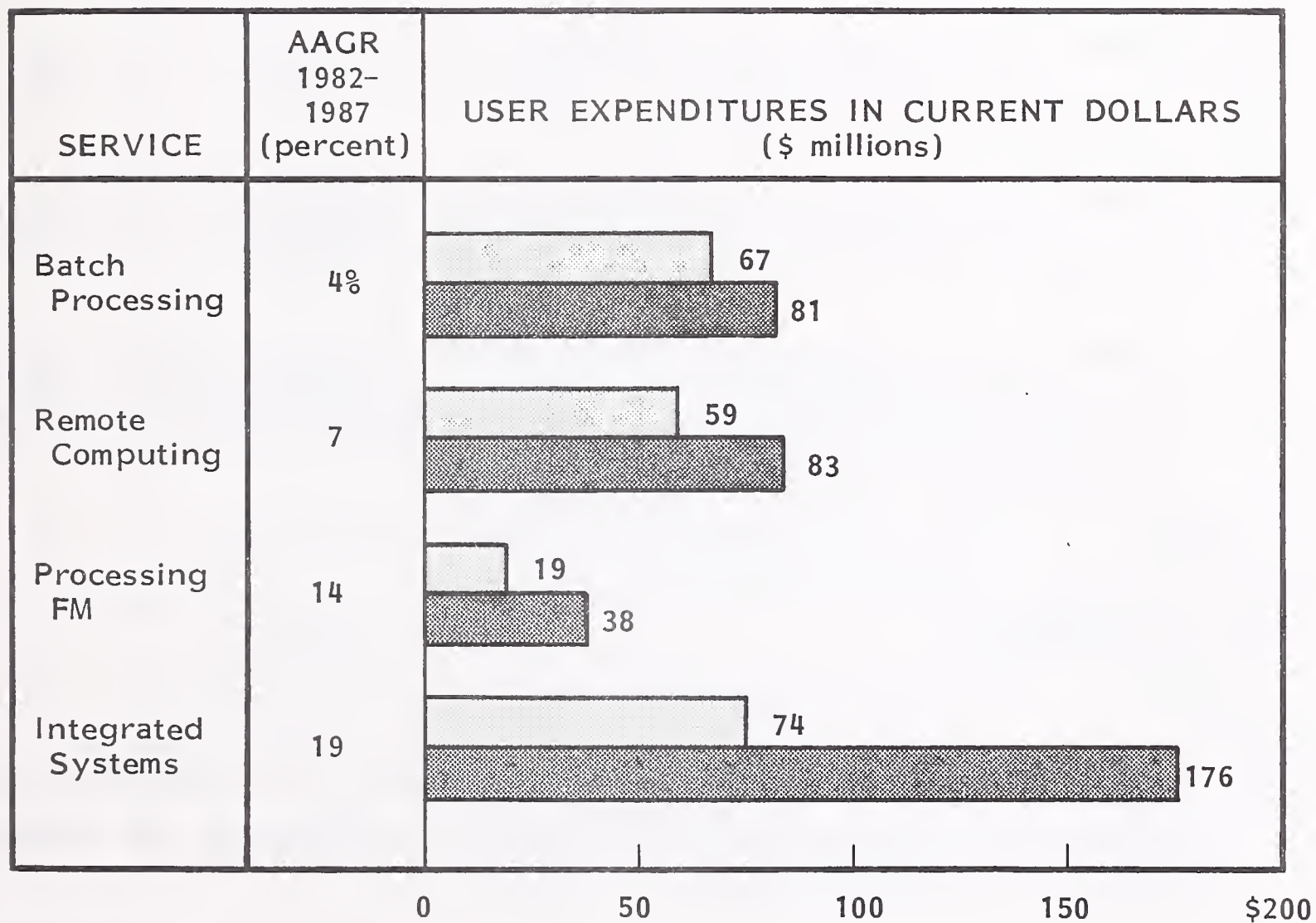
- ADP.

- Dyatron.

- Restaurant turnkey systems have provided a small integrated systems market. Restaurants found in hotels are normally serviced as a module of the hotel reservation system.

- Exhibit VII-24 provides the most recent demographic data on each of the subsectors that is part of this industry.

- Exhibit VII-25 relates the EDP budget to total expenditures in the industry, by company size.

- Exhibit VII-26 summarizes the processing and integrated systems market forecasts through 1987 and shows the gradual conversion of part of the demand for RCS services to integrated systems.

L.   WHOLESALE

- Nearly 44% of the total sales of the wholesale sector are accounted for by the wholesale distribution of petroleum products but this activity only accounts for 9% of the establishments.

- The most successful information services activity is integrated systems, which have been sold to large numbers of small establishments. Triad Systems has been particularly successful in this field.

- Over the forecast period, the strongest growth area is anticipated to be software products, particularly applications software, which will grow at an AAGR of 39%. Integrated systems are also expected to be successful,

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EXHIBIT VII-24

RETAIL INDUSTRY SECTOR -
DEMOGRAPHIC DATA

STANDARD INDUSTRIAL CLASSIFI-CATION	INDUSTRY NAME	TYPE OF STATISTIC	DATA
All	Retail Trade	Sales (1980) Number of Establishments (1979) Number of Employees (1979)	$866.4 Billion 1.2 Million 14.5 Million
52	Building Materials, Hardware	Sales (1980) Number of Establishments (1979) Number of Employees (1979)	$ 48.2 Billion 62,970 542,696
53	General Merchandise	Sales (1980) Number of Establishments (1979) Number of Employees (1979)	$116.7 Billion 37,349 2.0 Million
54	Food Stores	Sales (1980) Number of Establishments (1979) Number of Employees (1979)	$217.5 Billion 159,162 2.2 Million
55	Automotive Dealers & Gasoline Service Stations	Sales (1980) Number of Establishments (1979) Number of Employees (1979)	$261.5 Billion 211,199 1.9 Million
56	Apparel & Accessories	Sales (1980) Number of Establishments (1979) Number of Employees (1979)	$ 44.5 Billion 123,484 959,353
57	Furniture, Home Furnishings & Equipment	Sales (1980) Number of Establishments (1979) Number of Employees (1979)	$ 43.2 Billion 86,976 585,680
58	Eating & Drinking	Sales (1980) Number of Establishments (1979) Number of Employees (1979)	$ 86.6 Billion 283,599 4.4 Million
59	Miscellaneous Retail	Sales (1980) Number of Establishments (1979) Number of Employees (1979)	$ 48.2 Billion 260,114 1.9 Million

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MAS2 MAP2

EXHIBIT VII-25

EDP BUDGET AS A PERCENT OF TOTAL BUDGET IN THE
DISTRIBUTION INDUSTRY BY COMPANY SIZE
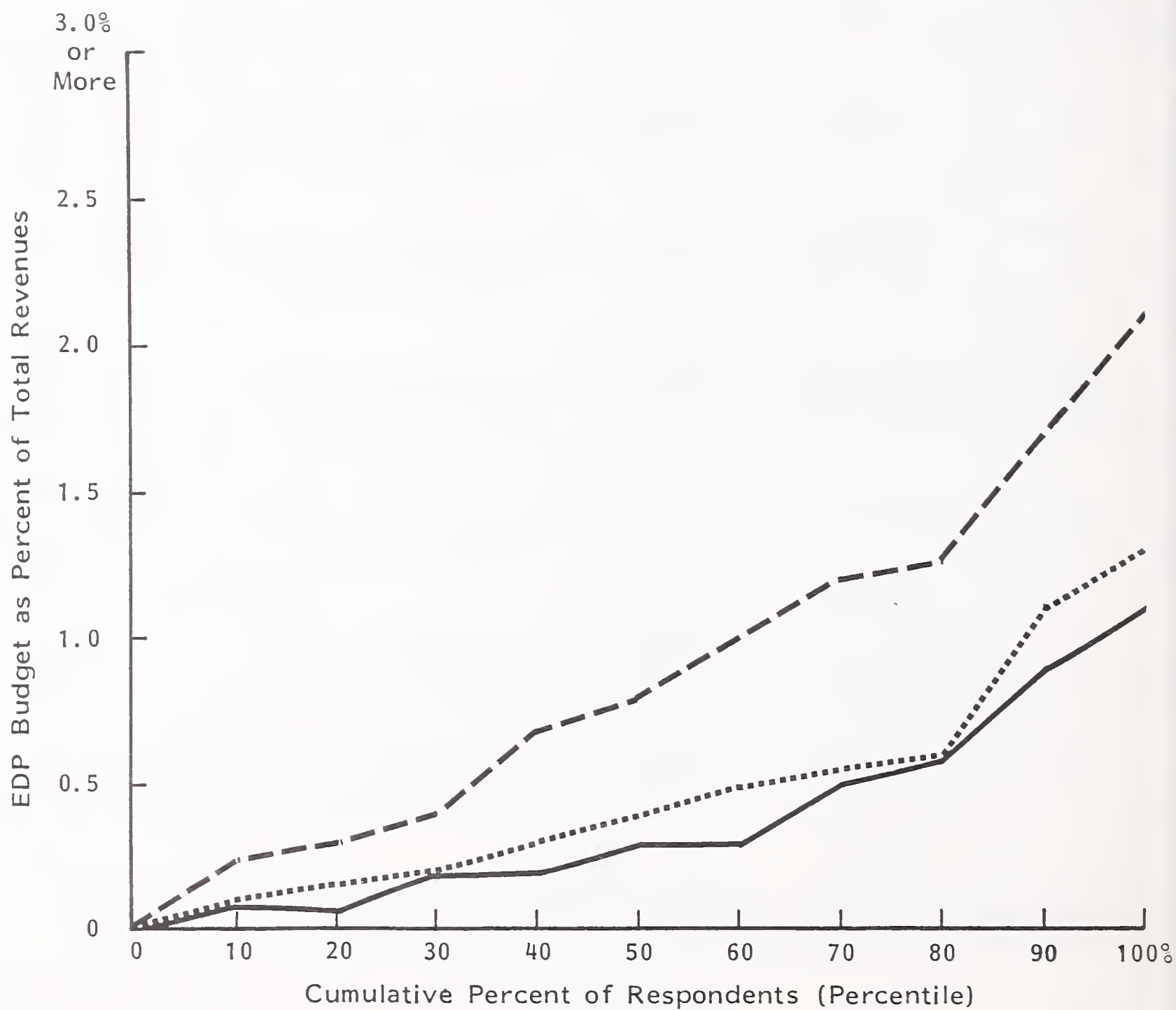
Key - Company Size:

••••••••••••• $0 - $199 million

— — — — $200 - $999 million

————— $1 billion and over

SOURCE: INPUT Annual Survey of EDP Managers

- 128 -

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EXHIBIT VII-26

PROCESSING SERVICES AND INTEGRATED SYSTEMS FORECAST -
RETAIL SECTOR, 1982-1987

SERVICE	AAGR 1982-1987 (percent)	USER EXPENDITURES IN CURRENT DOLLARS ($ millions)
Batch Processing	6%	248 / 334
Remote Computing	16	487 / 1,020
Processing FM	6	13 / 18
Integrated Systems	30	222 / 819

0   500   1,000   1,500 $2,000

	Expenditures in 1982
	Expenditures in 1987

INPUT
MAP2
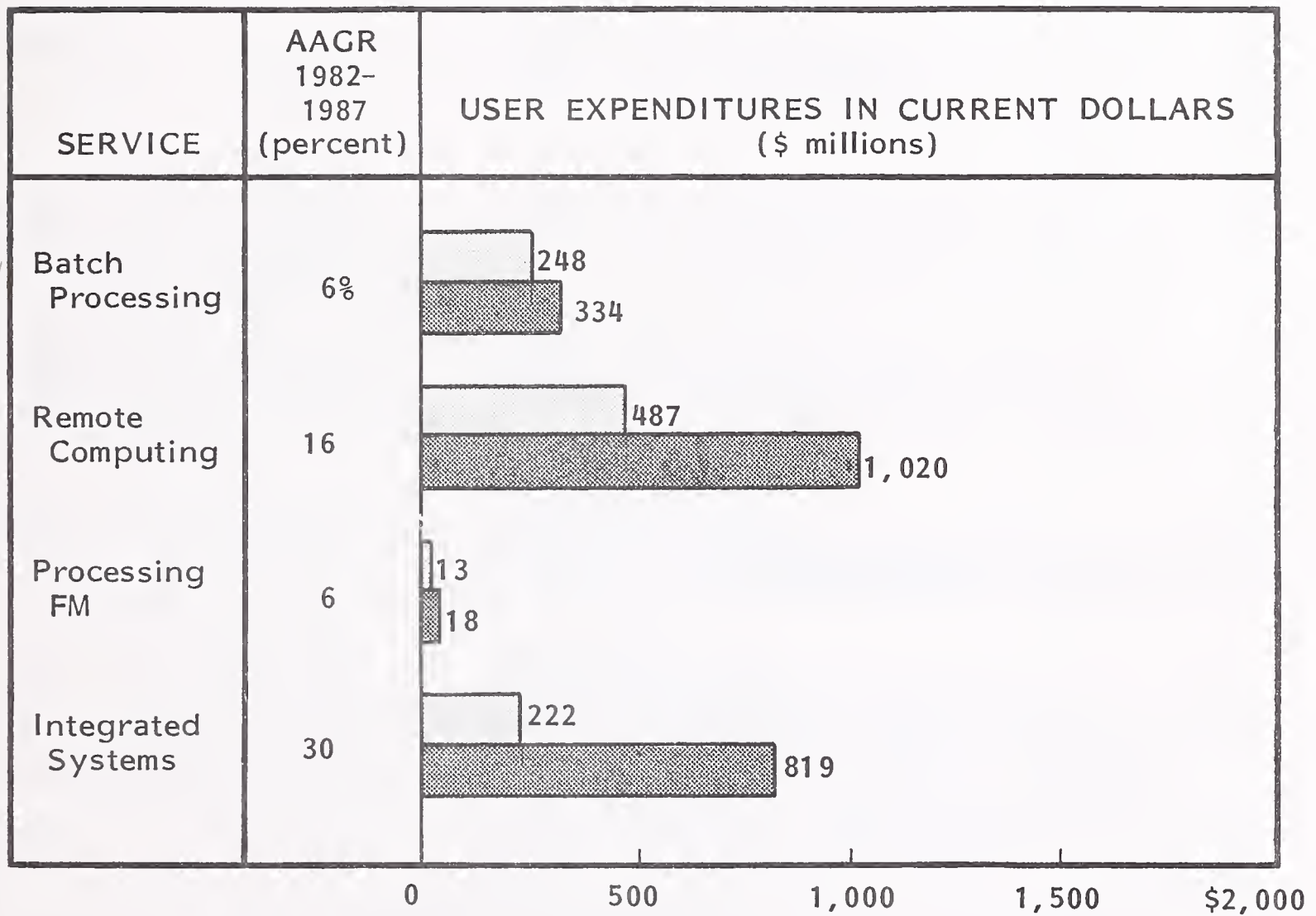
especially cross-industry systems (handling inventory and accounting applications).

- The processing services markets are not strong growth areas in this sector. In the batch market, function specific services are the most in demand, although the market is small. Industry specific RCS services is a fairly strong market, but revenue volume is small.

- Exhibit VII-27 provides the most recent demographic data on each of the subsectors that make up the sector.

- Exhibit VII-28 summarizes the processing and integrated systems market forecasts, showing the dominance of the integrated systems market in both growth and size. Order processing and warehouse inventory control are the two principal applications driving the market. CADO systems and Worldwide Chain Stores Systems Ltd. have both made this sector their principal target.

M.   FEDERAL GOVERNMENT

- The federal government sector is a combination of declining markets (in areas affected by federal spending cutbacks) and soaring growth (particularly defense departments).

- The sector is an excellent market for utility-oriented services:

    - Utility facilities management.

    - Utility remote computing.

- In 1982, the largest single information services contract ever awarded was won by EDS, with Amdahl and Applied Data Research as prime subcontractors. This contract, known as VIABLE, was awarded by the Department of the Army

INF

EXHIBIT VII-27

WHOLESALE INDUSTRY SECTOR -
DEMOGRAPHIC DATA

STANDARD INDUSTRIAL CLASSIFI- CATION	INDUSTRY NAME	TYPE OF STATISTIC	DATA
50-51	Wholesale Trade	Total Sales (1980) Number of Establishments (1979) Number of Employees (1979)	$ 362.4 Billion 200,726 2.7 Million
501	Motor Vehicles & Automotive Equipment	Total Sales (1980) Number of Establishments (1979) Number of Employees (1979)	$ 81.6 Billion 38,066 482,392
502	Furniture	Total Sales(1980) Number of Establishments (1979) Number of Employees (1979)	15.6 Billion 1,081 123,427
503	Lumber and Construction	Total Sales (1980) Number of Establishments (1979) Number of Employees (1979)	$ 33.2 Billion 16,237 214,696
504	Sporting Goods and Toys	Total Sales Number of Establishments (1979) Number of Employees (1979)	- 6,206 85,939
505	Metals and Minerals	Total Sales (1977) Number of Establishments (1979) Number of Employees (1979)	$ 29.0 Billion 9,259 151,630
506	Electrical Goods	Total Sales (1980) Number of Establishments (1979) Number of Employees (1979)	$ 46.4 Billion 25,040 319,240
507	Hardware, Plumbing and Heating	Total Sales (1980) Number of Establishments (1979) Number of Employees (1979)	$ 27.6 Billion 18,960 216,925
508	Machinery and Equipment	Total Sales (1980) Number of Establishments (1979) Number of Employees (1979)	$ 129.0 Billion 85,877 1.1 Million

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MAS2 MAP2

EXHIBIT VII-27 (Cont.)

WHOLESALE INDUSTRY SECTOR –
DEMOGRAPHIC DATA

STANDARD INDUSTRIAL CLASSIFI- CATION	INDUSTRY NAME	TYPE OF STATISTIC	DATA
509	Miscellaneous Durables	Total Sales Number of Establishments (1979) Number of Employees (1979)	– 109,855 1.5 Million
511	Paper and Paper Products	Total Sales (1980) Number of Establishments (1979) Number of Employees (1979)	$ 21.6 Billion 16,681 162,527
512	Drugs and Sundries	Total Sales (1980) Number of Establishments (1979) Number of Employees (1979)	$ 13.0 Billion 3,419 97,859
513	Apparel Piece Goods and Notions	Total Sales (1980) Number of Establishments (1979) Number of Employees (1979)	$ 25.8 Billion 12,472 144,619
514	Groceries & Related Products	Total Sales (1980) Number of Establishments (1979) Number of Employees (1979)	$149.9 Billion 36,127 649,767
515	Farm Products	Total Sales (1977) Number of Establishments (1979) Number of Employees (1979)	$ 84.2 Billion 13,947 141,378
516	Chemicals and Allied Products	Number of Establishments (1979) Number of Employees (1979)	8,330 105,043
517	Petroleum and Petroleum Products	Total Sales (1980) Number of Establishments (1979) Number of Employees (1979)	$158.2 Billion 18,879 184,268

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EXHIBIT VII-28

PROCESSING SERVICES AND INTEGRATED SYSTEMS FORECAST -
WHOLESALE SECTOR, 1982-1987

SERVICE	AAGR 1982-1987 (percent)	USER EXPENDITURES IN CURRENT DOLLARS ($ millions)
Batch Processing	7%	348 / 480
Remote Computing	13	228 / 416
Processing FM	11	38 / 63
Integrated Systems	29	231 / 809

0   200   400   600   800 $1,000

| | Expenditures in 1982 |
| | Expenditures in 1987 |

INPUT
MAP2
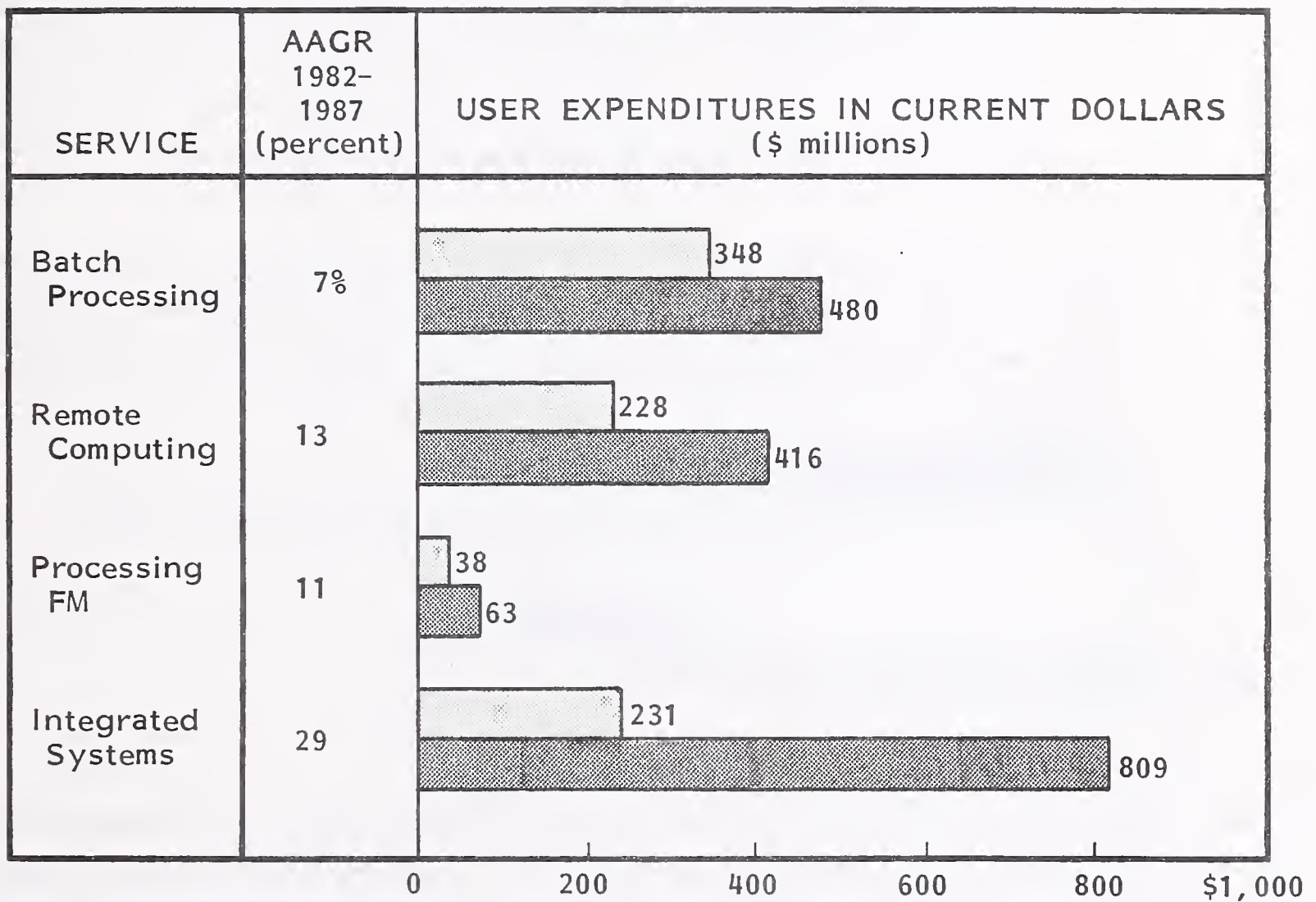
for a worldwide computer/communications operation in support of materials and logistics management.

- It is potentially the first in a series of very large government contracts since many government systems are out of date and unable to respond to changing requirements. Change by internal processes is virtually impossible because of ridiculously long procurement cycles and lack of competent and motivated personnel. Hence external contracting, particularly facilities management, will increasingly be regarded as the solution. This will be over the strenuous and often successful objection of the Civil Service unions and some members of Congress.

- Systems software and programming and analysis are two other high growth areas; systems software will be worth $1.8 billion by 1987 growing at a 34% AAGR, while programming and analysis will exceed $2.4 billion growing at an 18% AAGR.

- Exhibit VII-29 summarizes the processing and integrated systems markets.

N.   STATE AND LOCAL GOVERNMENT

- The state and local government sector is a small market for processing and integrated systems products and services. It has the lowest overall growth rate and, with the exception of programming and analysis services, is uniformly a small market for all of the other service categories.

- Exhibit VII-30 provides the most recent demographic data on the sector.

- Exhibit VII-31 shows the EDP dollar spending per employee by department size.

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EXHIBIT VII-29

PROCESSING SERVICES AND INTEGRATED SYSTEMS FORECAST - FEDERAL GOVERNMENT SECTOR, 1982-1987

SERVICE	AAGR 1982-1987 (percent)	USER EXPENDITURES IN CURRENT DOLLARS ($ millions)
Batch Processing	5%	67 / 85
Remote Computing	12	46 / 801
Processing FM	24	104 / 303
Integrated Systems	21	66 / 170

0   200   400   600   800 $1,000

Expenditures in 1982
Expenditures in 1987

- 135 -

INPUT
MAP2
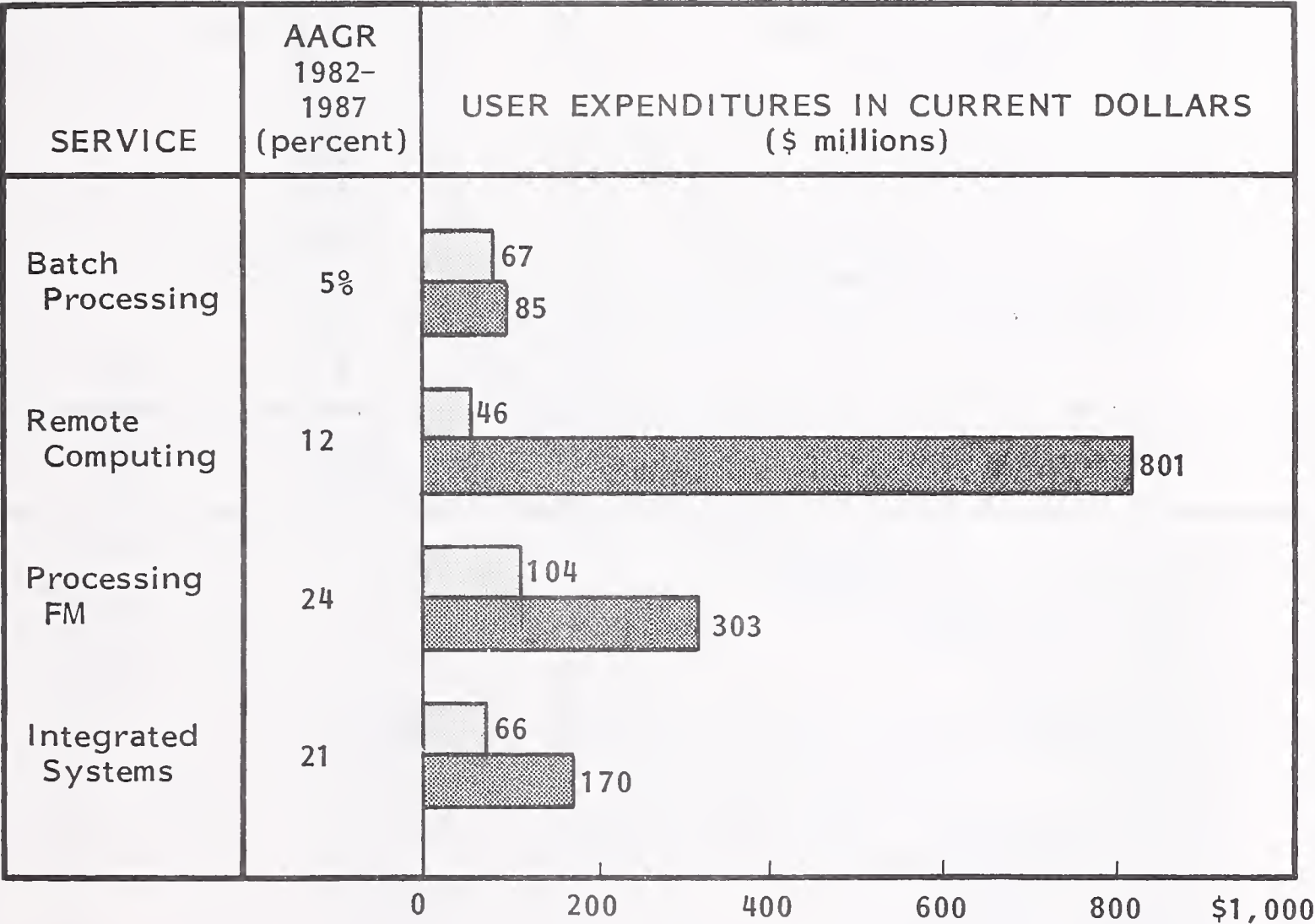
EXHIBIT VII-30

STATE AND LOCAL GOVERNMENT -

DEMOGRAPHIC DATA

SUMMARY OF FINANCES	DATA	
Revenues (Fiscal 1980)	$369 Billion	
Expenditures (Fiscal 1980)	$432 Billion	
Number of Employees (1980)	13.3 Million	
Number of States (1977)	50	
Number of Municipalities (1977)	18,862	
Number of Townships & Towns (1977)	16,822	
Number of Counties (1977)	3,042	
Number of School Districts (1977)	15,174	
Number of Special Districts (1977)	25,962	
Total State & Local Government Entities (1977)	79,912	

EXPENDITURES BY FUNCTION, FISCAL 1980	EXPENDITURES ($ billions)	PERCENT
Direct General Expenditures	$367.3	85.0%
Education	133.2	30.8
Higher Education	33.9	7.8
Local Schools	92.9	21.5
Highways	33.3	7.7
Public Welfare	45.5	10.5
Health	8.4	1.9
Hospitals	23.8	5.5
Police Protection	13.5	3.1
Local Fire Protection	5.7	1.3
Natural Resources	5.5	1.3
Sanitation & Sewage	13.2	3.1
Housing & Urban Renewal	6.1	1.4
Local Parks & Recreation	6.5	1.5
Financial Administration	6.7	1.5
General Control	8.7	2.0
Interest on General Debt	14.7	3.4
Utility & Liquor Store Expenditures	36.2	8.4
Water Supply System	9.2	2.1
Electric Power System	15.0	3.5
Transit System	7.7	1.8
Gas Supply System	1.7	0.4
Liquor Stores	2.6	0.6
Insurance Trust Expenditures	28.8	6.7
Employee Retirement	14.0	3.2
Unemployment Compensation	12.1	2.8

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EXHIBIT VII-31

EDP SPENDING PER EMPLOYEE BY DEPARTMENT SIZE
IN GOVERNMENT/EDUCATION

EDP Spending per Employee

($ thousands)

━ ━ ━ ━ = Median

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UA82 MAP2
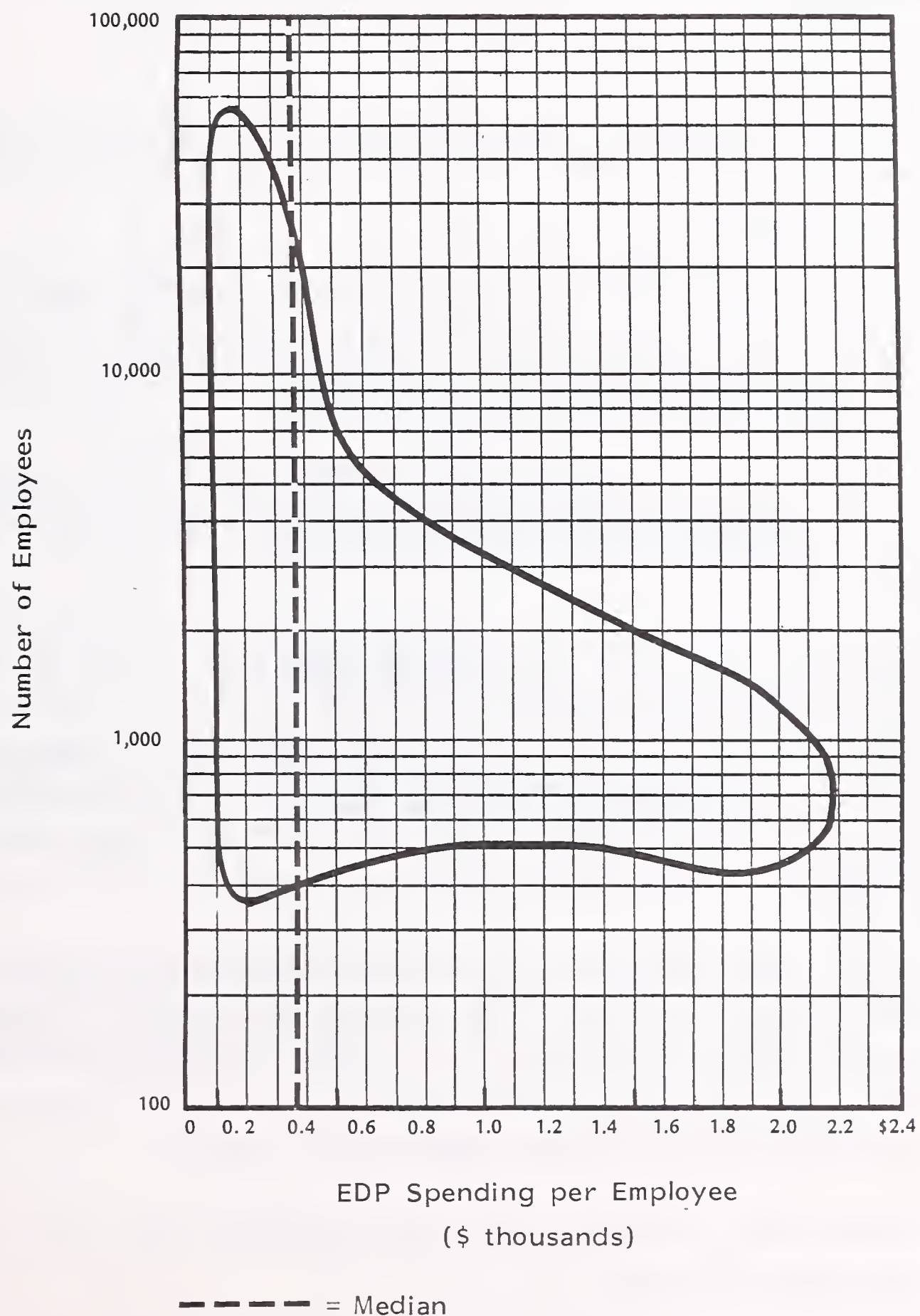
- Exhibit VII-32 summarizes the processing and integrated systems market forecasts through 1987.

O. SERVICES

- The services sector has been and will continue to be a strong RCS and integrated systems market. In the next five years both service categories will exceed $1 billion.

- Business services (advertising agencies, mailing, consumer credit reporting, news syndicates, personnel services) have been an excellent RCS market and will continue to be so.

- Legal services (attorneys, law offices, lawyers) have developed into a strong integrated systems market (particularly time-keeping/billing on small systems).

- The "big eight" CPA firms are emphasizing sales of software products, integrated systems, and professional services to their clients - with enormous success. The information services vendors, spearheaded by their association ADAPSO, have questioned the practice of using their accounting and auditing contracts within companies to press for the purchase of information products and services.

- At the same time provision of services to accountants, bookkeepers, etc., particularly for batch and RCS has become a major market. Tax processing services such as those offered by CCH-Computax and FAST-TAX, as well as practice management and planning support services, such as those offered by Comshare and GEISCO, are key segments of this market.

- Exhibit VII-33 provides the most recent demographic data on the subsectors that make up the sector.

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EXHIBIT VII-32

PROCESSING SERVICES AND INTEGRATED SYSTEMS FORECAST - STATE AND LOCAL GOVERNMENT SECTOR, 1982-1987

SERVICE	AAGR 1982-1987 (percent)	USER EXPENDITURES IN CURRENT DOLLARS ($ millions)
Batch Processing	9%	100 / 152
Remote Computing	11	81 / 136
Processing FM	11	30 / 50
Integrated Systems	20	48 / 117

0   50   100   150 $200

Expenditures in 1982
Expenditures in 1987

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MAP2
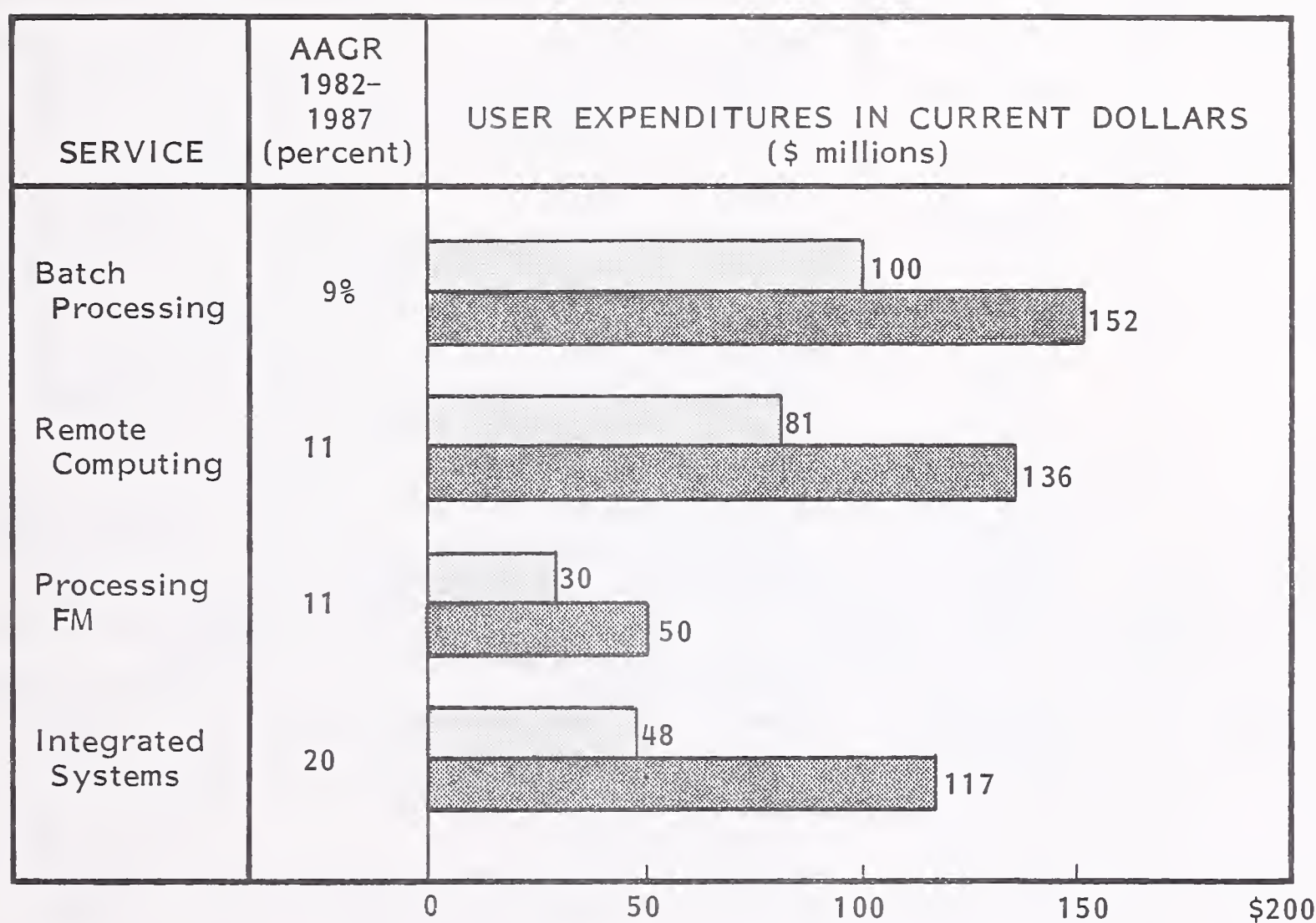
EXHIBIT VII-33

SERVICES INDUSTRY SECTOR -
DEMOGRAPHIC DATA

STANDARD INDUSTRIAL CLASSIFI-CATION	INDUSTRY NAME	TYPE OF STATISTIC	DATA
All	Services	Receipts (1977) Number of Establishments (1979) Number of Employees (1979)	$ 96.4 Billion 332,233 4.2 Million
73	Business Services	Receipts (1977) Number of Establishments (1979) Number of Employees (1979)	$ 54.5 Billion 154,313 2.9 Million
81	Legal Services	Receipts (1977) Number of Establishments (1979) Number of Employees (1979)	$ 18.7 Billion 94,897 477,744
891	Engineering and Archi-tectural Services	Receipts (1977) Number of Establishments (1979) Number of Employees (1979)	$ 14.7 Billion 36,180 474,467
892	Non-Commercial Research Organizations	Receipts (1977) Number of Establishments (1979) Number of Employees (1979)	$ 81.7 Million 2,026 70,664
893	Accounting, Auditing & Bookkeeping	Receipts (1977) Number of Establishments (1979) Number of Employees (1979)	$ 8.0 Billion 39,982 290,508
899	Services (N.E.C.)*	Receipts (1977) Number of Establishments (1979) Number of Employees (1979)	$439.2 Million 4,835 22,708

* Not elsewhere classified

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- Exhibit VII-34 relates the EDP dollar spending in the industry to company size.

- Exhibit VII-35 summarizes the processing and integrated systems market forecasts.

P.   OTHER INDUSTRIES

- This sector is an interesting cross-section of worthwhile markets, in particular:

    - Construction (both contractors and trades).

    - Real estate.

    - Hotels.

- Each is a good batch, RCS, and/or applications software products and/or integrated systems market, principally in industry specific applications (e.g., nationwide property search, hotel reservation systems). Construction and real estate markets are depressed now but will expand rapidly with the projected economic recovery.

- Exhibit VII-36 provides the latest demographic data on each of the subsectors.

- Exhibit VII-37 summarizes the processing and integrated systems market forecasts through 1987.

INPUT

EXHIBIT VII-34

EDP BUDGET AS A PERCENT OF TOTAL BUDGET IN THE
SERVICES INDUSTRY BY COMPANY SIZE
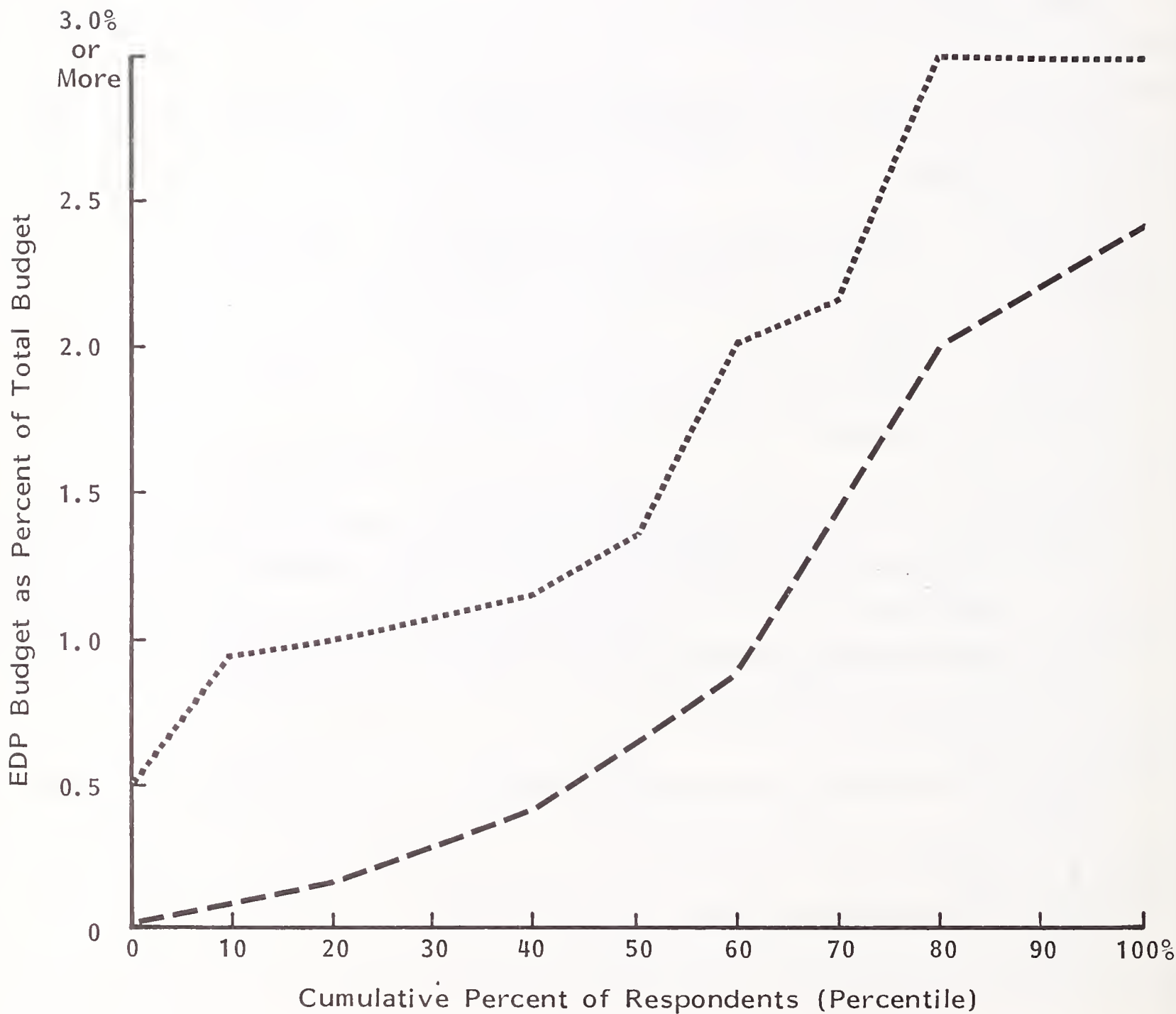
Key - Company Size:

.... $0 - $199 million

— — — — $200 million and over

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EXHIBIT VII-35

PROCESSING SERVICES AND INTEGRATED SYSTEMS FORECAST – SERVICES SECTOR, 1982-1987

SERVICE	AAGR 1982-1987 (percent)	USER EXPENDITURES IN CURRENT DOLLARS ($ millions)
Batch Processing	7%	342 / 470
Remote Computing	16	664 / 1,414
Processing FM	11	4 / 7
Integrated Systems	33	299 / 1,253

0   500   1,000   1,500 $2,000

Expenditures in 1982
Expenditures in 1987

INPUT
MAP2
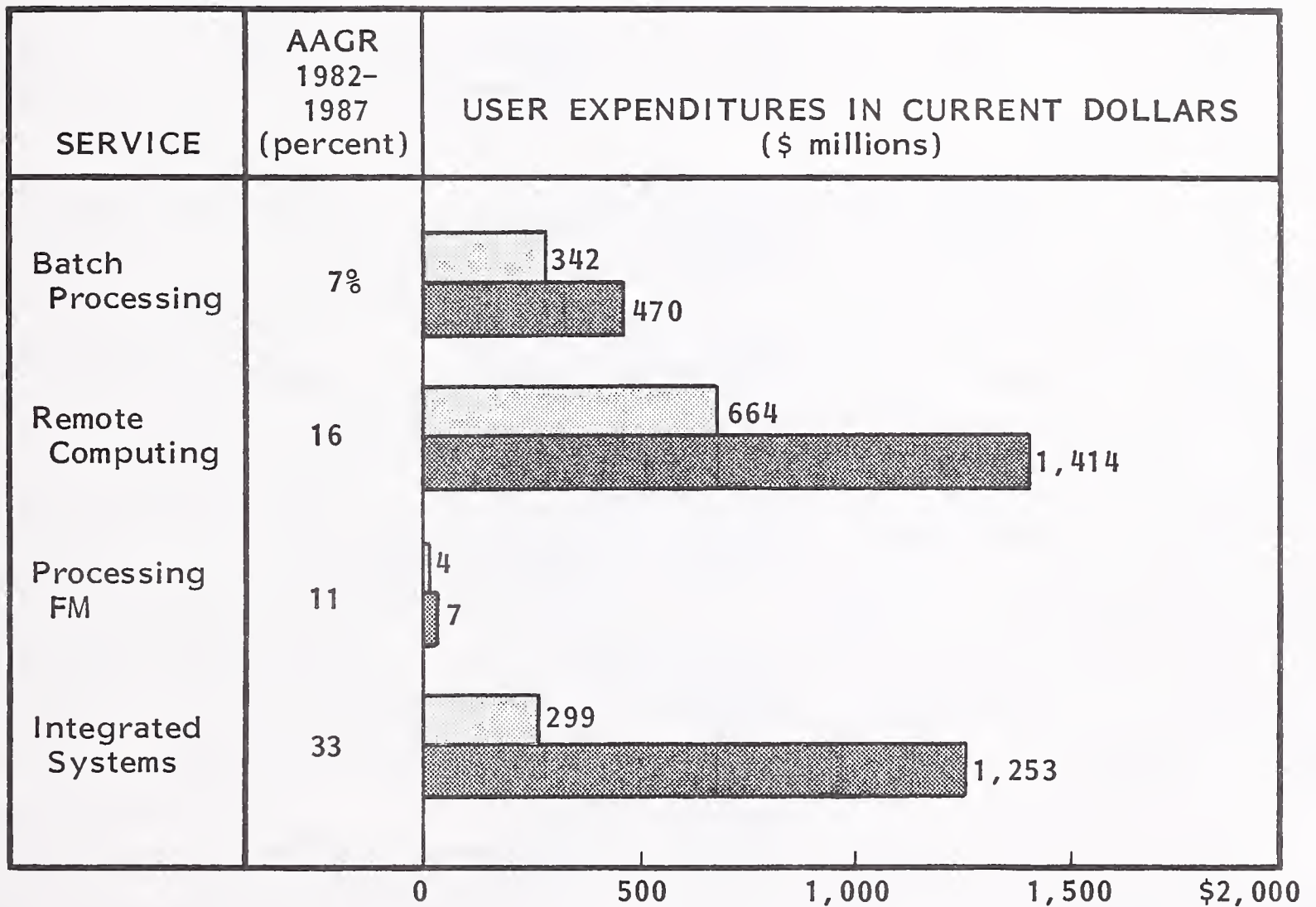
EXHIBIT VII-36

OTHER INDUSTRIES SECTOR –
DEMOGRAPHIC DATA

STANDARD INDUSTRIAL CLASSIFI- CATION	INDUSTRY NAME	TYPE OF STATISTIC	DATA
All	All	Number of Establishments (1979) Number of Employees (1979)	1.5 Million 12.5 Million
01-09	Agriculture, Forestry, Fishing	Sales (1978) Number of Establishments (1979) Number of Employees (1979)	$136.7 Billion 45,880 282,689
15-17	Construction	Sales (1977) Number of Establishments (1979) Number of Employees (1979)	$223.2 Billion 447,273 4.6 Million
65	Real Estate	Sales (1979) Number of Establishments (1979) Number of Employees (1979)	$119.8 Billion 175,565 1.0 Million
66	Real Estate, Insurance	Sales (1979) Number of Establishments (1979) Number of Employees (1979)	$341.0 Million 6,730 32,221
70	Hotels, Etc.	Receipts (1979) Number of Establishments (1979) Number of Employees (1979)	$ 23.5 Billion 42,315 1.1 Million
72	Personal Services	Receipts (1979) Number of Establishments (1979) Number of Employees (1979)	$ 22.2 Billion 154,914 965,099
75	Auto Repair	Receipts (1979) Number of Establishments (1979) Number of Employees (1979)	$ 29.3 Billion 101,605 585,992
76	Miscellaneous Repair	Receipts (1978) Number of Establishments (1979) Number of Employees (1979)	$ 15.8 Billion 49,140 313,929

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EXHIBIT VII-36 (Cont.)

OTHER INDUSTRIES SECTOR –
DEMOGRAPHIC DATA

STANDARD INDUSTRIAL CLASSIFI-CATION	INDUSTRY NAME	TYPE OF STATISTIC	DATA
78	Motion Pictures	Receipts (1977) Number of Establishments (1979) Number of Employees (1979)	$ 7.8 Billion 15,041 213,011
79	Recreation	Receipts (1977) Number of Establishments (1979) Number of Employees (1979)	$ 11.9 Billion 45,317 692,766
83	Social Services	Receipts (1977) Number of Establishments (1979) Number of Employees (1979)	$ 10.3 Billion 59,867 1.0 Million
84	Museums, Etc.	Expenses (1977) Number of Establishments (1979) Number of Employees (1979)	$613.1 Million 1,530 28,785
86	Membership Organizations	Expenses (1977) Number of Establishments (1979) Number of Employees (1979)	$ 12.1 Billion 131,875 1.2 Million
99	Non-Classifiable	Number of Establishments (1979) Number of Employees (1979)	219,736 485,864

INPUT
MAS2 MAP2

EXHIBIT VII-37

PROCESSING SERVICES AND INTEGRATED SYSTEMS FORECAST -
OTHER INDUSTRIES SECTOR, 1982-1987

SERVICE	AAGR 1982-1987 (percent)	USER EXPENDITURES IN CURRENT DOLLARS ($ millions)
Batch Processing	8%	302 / 447
Remote Computing	16	382 / 811
Processing FM	10	13 / 22
Integrated Systems	23	80 / 228

0   200   400   600   800 $1,000

	Expenditures in 1982
	Expenditures in 1987

INP
MAP2
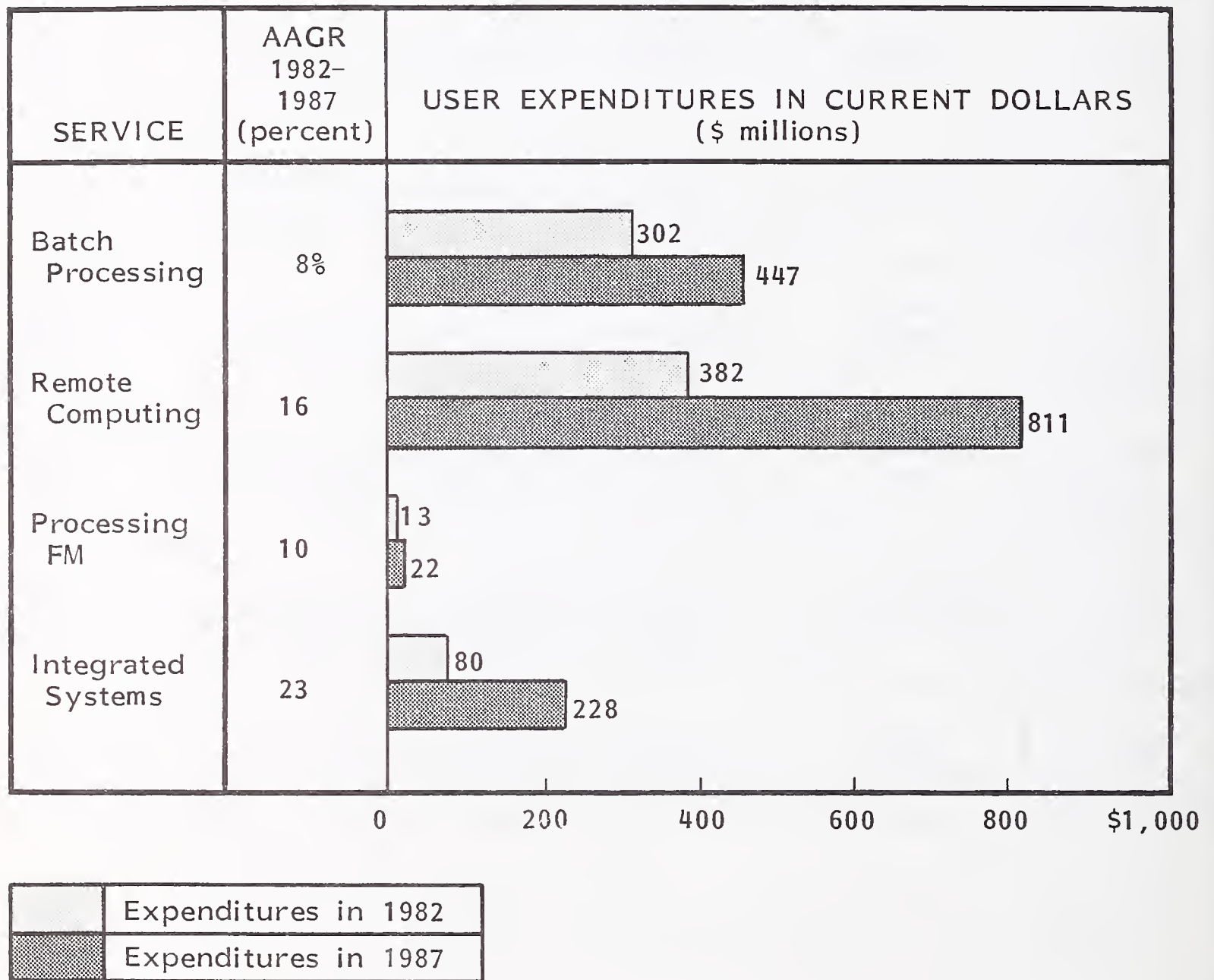
APPENDIX A: DEFINITIONS

APPENDIX A: DEFINITIONS

A. REVENUE

- All revenue and user expenditures reported are available (i.e., noncaptive) revenue, as defined below.

- NONCAPTIVE INFORMATION SERVICES REVENUE - Revenue received for computer services provided within the United States from users who are not part of the same parent corporation as the vendor.

- CAPTIVE INFORMATION SERVICES REVENUE - Revenue received from users who are part of the same parent corporation as the vendors.

- TOTAL INFORMATION SERVICES REVENUE - Revenue received from services provided by vendors which perform:

    - Data processing functions using vendor computers (processing services).

    - Services that assist users to perform such functions on their own computers (software products and/or professional services).

    - A combination of hardware and software, integrated into a total system (integrated systems).

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● OTHER REVENUE - Revenue derived from lines of business other than those defined above.

B.   SERVICE MODES

● PROCESSING SERVICES - Remote computing services, batch services, and processing facilities management.

- REMOTE COMPUTING SERVICES (RCS) - Provision of data processing to a user by means of terminals at the user's sites(s) connected by a data communications network to the vendor's central computer. There are five submodes of RCS:

    • INTERACTIVE (timesharing) - Characterized by the interaction of the user with the system, primarily for problem-solving time-sharing but also for data entry and transaction processing: the user is on-line to the program/files.

    • REMOTE BATCH - Where the user hands over control of a job to the vendor's computer, which schedules job execution according to priorities and resource requirements.

    • DATA BASE - Characterized by the retrieval and processing of information from a vendor-maintained data base. The data base may be owned by the vendor or a third party.

    • USER SITE HARDWARE SERVICES (USHS) - These offerings provided by RCS vendors place programmable hardware on the user's site (rather than the EDP center). USHS offers:

        - Access to a communications network.

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- Access through the network to the RCS vendor's larger computers.

- Significant software as part of the service.

- VIDEOTEX - A variant of interactive remote computing services.

  - Access may be through cable television systems as well as ordinary telephone lines.

  - The display is a television set equipped with a keypad or typewriter keyboard and special circuitry.

  - The user may not create programs on the remote computer.

  - The user may query or enter transactions to the remote computer through menu-driven software.

  - Prestel and QUBE are examples of videotex.

- BATCH SERVICES - This includes data processing performed at vendors' sites of user programs and/or data which are physically transported (as opposed to electronically by telecommunications media) to and/or from those sites. Data entry and data output services, such as keypunching and computer output microfilm processing, are also included. Batch services include those expenditures by users who take their data to a vendor site which has a terminal connected to a remote computer for the actual processing.

- PROCESSING FACILITIES MANAGEMENT (PFM) - (Also referred to as "Resource Management" or "Systems Management.") The management of all or part of a user's data processing functions under a long-term

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contract (not less than one year). This would include both remote computing and batch services. To qualify as PFM, the contractor must directly plan, control, operate, and own the facility provided to the user, either on-site, through communications lines, or in a mixed mode.

- <u>PROFESSIONAL SERVICES</u> - Made up of services in the following categories:

    - <u>EDUCATION SERVICES</u> - EDP products and/or services - related to corporations, not individuals.

    - <u>CONSULTING SERVICES</u> - EDP management consulting and feasibility studies, for example.

    - <u>PROGRAMMING AND ANALYSIS</u> - Including system design, contract programming, and "body shopping."

    - <u>PROFESSIONAL SERVICES FACILITIES MANAGEMENT (PSFM)</u> - The counterpart to processing facilities management, except that in this case the computers are owned by the client, not the vendor; the vendor provides people to operate and manage the client facility.

- <u>INTEGRATED SYSTEMS</u> (Also known as Turnkey Systems) - An integration of systems and applications software with hardware, packaged as a single entity. The value added by the vendor is primarily in the software. Most CAD/CAM systems and many small business systems are integrated systems. This does not include specialized hardware systems such as word processors, cash registers, and process control systems.

- Integrated systems revenue in this report is divided into two categories:

    - <u>INDUSTRY SPECIFIC</u> systems; i.e., systems that serve a specific function for a given industry sector such as seismic processing systems, automobile dealer parts inventory, CAD/CAM systems, discrete manufacturing control systems, etc.

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- CROSS-INDUSTRY systems; i.e., systems that provide a specific function that is applicable to a wide range of industry sectors such as financial planning systems, payroll systems, personnel management systems, etc.

- Revenues include hardware, software, and support functions.

- SOFTWARE PRODUCTS - This category includes users' purchases of applications and systems packages for use on in-house computer systems. Included are lease and purchase expenditures, as well as fees for work performed by the vendor to implement and maintain the package at the users' sites. Fees for work performed by organizations other than the package vendor are counted in professional services. There are several subcategories of software products:

  - APPLICATIONS PRODUCTS - Software that performs processing to service user functions. They consist of:

    - CROSS-INDUSTRY PRODUCTS - Used in multiple user industry sectors. Examples are payroll, inventory control, and financial planning.

    - INDUSTRY-SPECIALIZED PRODUCTS - Used in a specific industry sector such as banking and finance, transportation, or discrete manufacturing. Examples are demand deposit accounting and airline scheduling.

  - SYSTEMS PRODUCTS - Software that enables the computer/communications system to perform basic functions. They consist of:

    - SYSTEMS CONTROL PRODUCTS - Function during applications program execution to manage the computer system resource. Examples include operating systems, communication monitors, emulators, and spoolers.

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.   DATA CENTER MANAGEMENT PRODUCTS - Used by opera-
     tions personnel to manage the computer system resources and
     personnel more effectively.   Examples include performance
     measurement, job accounting, computer operations scheduling,
     and utilities.

.   APPLICATION DEVELOPMENT PRODUCTS - Used to prepare
     applications for execution by assisting in designing, program-
     ming, testing, and related functions.   Examples include lan-
     guages, sorts, productivity aids, data dictionaries, data base
     management systems, report writers, project control systems
     and retrieval systems.

C.   TYPES OF PROCESSING SERVICES

●   Processing services encompass processing services facilities management,
    remote computing services, and batch services. They are categorized by type
    of services bought by users as follows:

    -    Function Specific services are the processing of applications that are
         targeted to specific user departments (e.g., finance, personnel, sales)
         but cut across industry lines. Most general ledger, accounts receivable,
         payroll, and personnel applications fall into this category. Functional
         specific data base services where the vendor supplies the data base and
         controls access to it (although it may be owned by a third party), are
         included in this category.   General-purpose tools such as financial
         planning systems, linear regression packages, and other statistical
         routines are also included. However, when the application, tool, or data
         base is designed for specific industry usage, then the service is industry
         specific.

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- <u>Industry Specific</u> services provide processing for particular functions or problems unique to an industry or industry group. The software is provided by the vendor either as a complete package or as an applications "tool" which the user employs to produce a unique solution. Specialty applications can be either business or scientific in orientation. Industry specific data base services, where the vendor supplies the data base and controls access to it (although it may be owned by a third party), are also included under this category. Examples of industry specialty applications are seismic data processing, numerically controlled machine tool software development, and demand deposit accounting.

- <u>Utility</u> services are those where the vendor provides access to a computer and/or communications network with basic software that enables any user to develop its own problem solution or processing system. These basic tools include terminal-handling software, sorts, language compilers, data base management systems, information retrieval software, scientific library routines, and other systems software.

D.   OTHER CONSIDERATIONS

● When questions arise as to the proper place to count certain user expenditures, INPUT addresses the questions from the user viewpoint and categorizes the expenditures according to the answer to: "What do the users perceive they are buying?"

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E. INDUSTRY SECTOR DEFINITIONS

- The standard industrial classification (SIC) codes are used to define the economic activity contained in generic sectors such as "Process Manufacturing," "Insurance," "Transportation," etc.

- The specific industries (and their SIC codes) included under these generic industry sectors are detailed in Exhibit A-1.

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INDUSTRY SECTOR DEFINITIONS

INDUSTRY SECTOR	INDUSTRY SIC	INDUSTRY NAME
Discrete Manufacturing	23	Apparel
	25	Furniture
	27	Printing
	31	Leather
	34	Metal
	35	Machinery
	36	Electronics
	37	Transportation
	38	Scientific and Control Instruments
	39	Miscellaneous Manufacturing
Process Manufacturing	10	Metal Mining
	11	Anthracite Mining
	12	Coal Mining
	13	Oil and Gas Extraction
	20	Food Products
	21	Tobacco
	22	Textile Products
	24	Lumber and Wood Products
	26	Paper Products
	28	Chemicals
	29	Petroleum
	30	Rubber and Plastics
	32	Stone, Glass, Clay
	33	Primary Metals

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INDUSTRY SECTOR DEFINITIONS

INDUSTRY SECTOR	INDUSTRY SIC	INDUSTRY NAME
Transportation	40	Railroads
	41	Local Transit
	42	Motor Freight
	43	U.S. Postal Service
	44	Water Transportation
	45	Air
	46	Pipelines
	47	Transportation Services
Utilities	48	Communications
	49	Electric, Gas, and Sanitary
Banking and Finance	60	Banks
	61	Credit Agencies
	62	Security and Commodity Brokers
	67	Holding and Investment Offices
Insurance	63	Insurance (Life, Health, Etc.)
	64	Insurance Agents
Medical	80	Health Services

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INDUSTRY SECTOR DEFINITIONS

INDUSTRY SECTOR	INDUSTRY SIC	INDUSTRY NAME
Education	82	Educational Services
Retail	52	Building Materials, Hardware
	53	General Merchandise
	54	Food
	55	Automotive and Gas Stations
	56	Apparel
	57	Furniture
	58	Eating and Drinking
	59	Miscellaneous Retail
Wholesale	50	Durable Goods
	51	Nondurable Goods
State and Local Government	91-97	As Appropriate
Federal Government	91-97	As Appropriate
Services	73	Business Services (excluding information services companies themselves)

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INDUSTRY SECTOR DEFINITIONS

INDUSTRY SECTOR	INDUSTRY SIC	INDUSTRY NAME
Other Industries	01-09	Agriculture, Forestry, and Fishing
	15-17	Construction
	65	Real Estate
	66	Combinations of Real Estate, Insurance, Loans, Law Offices
	70	Hotels, Rooming Houses, Camps, and Other Lodging Places
	72	Personal Services
	75	Automotive Repair, Services, and Garages
	76	Miscellaneous Repair Services
	78	Motion Pictures
	79	Amusement and Recreation Services, Except Motion Pictures
	83	Social Services
	84	Museums, Art Galleries, Botanical and Zoological Gardens
	86	Membership Organizations
	89	Miscellaneous Services

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APPENDIX B: DATA BASE

APPENDIX B: DATA BASE

- This section contains the data base used in this report and in the companion report on software products and professional services.

- In addition to the 1981 base year data, data are given for all of the intervening years from 1982 to 1987.

- None of the individual numbers have been rounded, as they have been in the main body of the report (but the reader should not assume a higher degree of accuracy for these data than for those in the main body of the report). Totals, however, have been rounded so that:

  - Certain items will not total due to the rounding.

  - The exhibits will not necessarily cross-foot and total exactly because the tabulations were rounded along different axes.

- Exhibits B-1 through B-28 present the market data by industry sector.

- Exhibit B-29 through B-43 present the market data by delivery mode.

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INFORMATION SERVICES - TOTAL MARKET FORECAST
BY INDUSTRY SECTOR, 1982 - 1987

INDUSTRY SECTOR	USER EXPENDITURES FORECAST								
	1981 ($M)	81-82 GROWTH (%)	1982 ($M)	1983 ($M)	1984 ($M)	1985 ($M)	1986 ($M)	1987 ($M)	AAGR 82-87 (%)
DISCRETE MANUFACTURING	3514	18	4160	5028	6374	8300	10958	14544	28
PROCESS MANUFACTURING	2212	20	2658	3269	4121	5265	6737	8604	26
TRANSPORTATION	590	15	677	804	1005	1292	1674	2187	26
UTILITIES	805	15	928	1081	1293	1557	1889	2301	20
BANKING/FINANCE	3697	17	4341	5217	6456	8083	10185	12946	24
INSURANCE	1554	17	1819	2189	2731	3423	4286	5391	24
MEDICAL	1090	21	1321	1625	2043	2590	3290	4211	26
EDUCATION	377	7	404	445	506	591	686	803	15
RETAIL DISTRIBUTION	1227	14	1396	1611	1960	2410	3000	3781	22
WHOLESALE DISTRIBUTION	1146	17	1346	1601	1972	2456	3081	3910	24
FEDERAL GOVERNMENT	2460	14	2803	3246	3847	4611	5608	6777	19
STATE/LOCAL GOVERNMENT	1339	7	1433	1566	1758	2031	2360	2738	14
SERVICES	1314	16	1525	1825	2204	2690	3310	4078	22
OTHER	1008	10	1110	1283	1514	1807	2186	2649	19
TOTAL	22330	16	25920	30790	37790	47110	59250	74920	24

NOTE: Grand totals are rounded to nearest $10 million; therefore columns may not total exactly.
Growth rates are rounded to nearest 1%.

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PROCESSING SERVICES - TOTAL MARKET FORECAST
BY INDUSTRY SECTOR, 1982 - 1987

INDUSTRY SECTOR	USER EXPENDITURES FORECAST								
	1981 ($M)	81-82 GROWTH (%)	1982 ($M)	1983 ($M)	1984 ($M)	1985 ($M)	1986 ($M)	1987 ($M)	AAGR 82-87 (%)
DISCRETE MANUFACTURING	1193	9	1299	1444	1649	1895	2186	2493	14
PROCESS MANUFACTURING	1083	15	1250	1479	1749	2078	2474	2912	18
TRANSPORTATION	208	9	226	246	278	315	364	423	13
UTILITIES	391	9	428	476	534	601	683	780	13
BANKING/FINANCE	2380	14	2705	3098	3554	4120	4787	5580	16
INSURANCE	628	10	689	768	873	1002	1151	1319	14
MEDICAL	655	15	754	875	1026	1208	1428	1687	17
EDUCATION	141	3	145	150	159	173	185	202	7
RETAIL DISTRIBUTION	696	8	748	819	921	1043	1197	1371	13
WHOLESALE DISTRIBUTION	572	7	614	667	733	804	876	959	9
FEDERAL GOVERNMENT	579	9	633	707	797	904	1033	1189	13
STATE/LOCAL GOVERNMENT	200	6	211	229	252	278	307	338	10
SERVICES	912	11	1010	1132	1267	1433	1645	1891	13
OTHER	653	7	697	780	879	989	1126	1279	13
TOTAL	10290	11	11410	12870	14670	16840	19450	22420	14

NOTE: Grand totals are rounded to nearest $10 million; therefore columns may not total exactly.
Growth rates are rounded to nearest 1%.

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FUNCTION SPECIFIC PROCESSING SERVICES - TOTAL MARKET FORECAST
BY INDUSTRY SECTOR, 1982 - 1987

INDUSTRY SECTOR	USER EXPENDITURES FORECAST								
	1981 ($M)	81-82 GROWTH (%)	1982 ($M)	1983 ($M)	1984 ($M)	1985 ($M)	1986 ($M)	1987 ($M)	AAGR 82-87 (%)
DISCRETE MANUFACTURING	454	7	484	523	585	659	746	832	11
PROCESS MANUFACTURING	254	13	287	337	397	476	574	679	19
TRANSPORTATION	47	9	51	55	60	67	75	83	10
UTILITIES	124	11	138	153	170	191	216	243	12
BANKING/FINANCE	274	11	305	341	380	422	460	499	10
INSURANCE	116	9	127	144	165	190	219	252	15
MEDICAL	50	18	59	69	80	92	105	119	15
EDUCATION	41	5	43	45	47	51	55	59	7
RETAIL DISTRIBUTION	133	11	147	166	187	213	244	278	13
WHOLESALE DISTRIBUTION	214	14	243	275	310	344	377	415	11
FEDERAL GOVERNMENT	169	8	182	198	219	243	270	301	11
STATE/LOCAL GOVERNMENT	45	9	49	54	61	68	77	88	12
SERVICES	232	10	255	283	312	352	399	454	12
OTHER	177	6	188	212	238	266	297	332	12
TOTAL	2330	10	2560	2850	3210	3630	4110	4630	13

NOTE: Grand totals are rounded to nearest $10 million; therefore columns may not total exactly.
Growth rates are rounded to nearest 1%.

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INDUSTRY SPECIFIC PROCESSING SERVICES - TOTAL MARKET FORECAST
BY INDUSTRY SECTOR, 1982 - 1987

INDUSTRY SECTOR	USER EXPENDITURES FORECAST							
	1981 ($M)	81-82 GROWTH (%)	1982 ($M)	1983 ($M)	1984 ($M)	1985 ($M)	1986 ($M)	1987 ($M)	AAGR 82-87 (%)
DISCRETE MANUFACTURING	546	12	609	698	815	950	1110	1277	16
PROCESS MANUFACTURING	537	20	645	793	955	1141	1347	1567	19
TRANSPORTATION	123	11	136	151	175	203	239	285	16
UTILITIES	121	12	136	156	179	204	236	274	15
BANKING/FINANCE	2035	14	2324	2672	3079	3590	4202	4937	16
INSURANCE	475	10	523	581	661	760	875	1004	14
MEDICAL	584	15	673	782	920	1087	1291	1532	18
EDUCATION	59	4	61	64	70	77	83	93	9
RETAIL DISTRIBUTION	489	8	526	575	649	736	849	978	13
WHOLESALE DISTRIBUTION	215	8	232	253	279	313	350	393	11
FEDERAL GOVERNMENT	37	11	41	45	52	61	70	82	15
STATE/LOCAL GOVERNMENT	46	7	49	55	60	66	73	80	10
SERVICES	589	12	660	747	842	955	1106	1281	14
OTHER	370	8	399	452	515	586	676	779	14
TOTAL	6230	13	7010	8020	9250	10730	12510	14560	16

NOTE: Grand totals are rounded to nearest $10 million; therefore columns may not total exactly.
Growth rates are rounded to nearest 1%.

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UTILITY PROCESSING SERVICES - TOTAL MARKET FORECAST
BY INDUSTRY SECTOR, 1982 - 1987

INDUSTRY SECTOR	USER EXPENDITURES FORECAST							
	1981 ($M)	81-82 GROWTH (%)	1982 ($M)	1983 ($M)	1984 ($M)	1985 ($M)	1986 ($M)	1987 ($M)	AAGR 82-87 (%)
DISCRETE MANUFACTURING	193	7	206	223	249	286	330	384	13
PROCESS MANUFACTURING	292	8	318	349	397	461	553	666	16
TRANSPORTATION	38	1	39	40	43	45	50	54	7
UTILITIES	146	5	154	167	185	206	231	263	11
BANKING/FINANCE	71	7	76	85	95	108	125	144	14
INSURANCE	37	5	39	43	47	52	57	63	10
MEDICAL	21	5	22	24	26	29	32	36	10
EDUCATION	41	0	41	41	42	45	47	50	4
RETAIL DISTRIBUTION	74	1	75	78	85	94	104	116	9
WHOLESALE DISTRIBUTION	143	-3	139	139	144	147	149	151	2
FEDERAL GOVERNMENT	373	10	410	464	526	600	693	806	14
STATE/LOCAL GOVERNMENT	109	4	113	120	131	144	157	170	8
SERVICES	91	4	95	102	113	126	140	156	10
OTHER	106	4	110	116	126	137	153	169	9
TOTAL	1730	6	1840	1990	2210	2480	2820	3230	12

NOTE: Grand totals are rounded to nearest $10 million; therefore columns may not total exactly.
Growth rates are rounded to nearest 1%.

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REMOTE COMPUTING SERVICES - TOTAL MARKET FORECAST
BY INDUSTRY SECTOR, 1982 - 1987

INDUSTRY SECTOR	USER EXPENDITURES FORECAST							
	1981 ($M)	81-82 GROWTH (%)	1982 ($M)	1983 ($M)	1984 ($M)	1985 ($M)	1986 ($M)	1987 ($M)	AAGR 82-87 (%)
DISCRETE MANUFACTURING	675	11	746	844	985	1163	1382	1624	17
PROCESS MANUFACTURING	437	11	485	554	652	782	959	1173	19
TRANSPORTATION	116	11	129	141	165	192	230	275	16
UTILITIES	301	10	332	373	424	483	556	642	14
BANKING/FINANCE	985	16	1141	1337	1581	1910	2338	2860	20
INSURANCE	217	10	238	269	308	357	417	484	15
MEDICAL	214	16	249	293	348	416	507	619	20
EDUCATION	58	2	59	60	64	70	76	83	7
RETAIL DISTRIBUTION	449	9	487	540	622	724	859	1020	16
WHOLESALE DISTRIBUTION	210	9	228	248	281	319	363	416	13
FEDERAL GOVERNMENT	434	6	462	498	553	622	703	801	12
STATE/LOCAL GOVERNMENT	76	7	81	86	96	107	120	136	11
SERVICES	595	12	664	750	861	1000	1189	1414	16
OTHER	349	9	382	436	504	586	690	811	16
TOTAL	5120	11	5680	6430	7440	8730	10390	12360	17

NOTE: Grand totals are rounded to nearest $10 million; therefore columns may not total exactly.
Growth rates are rounded to nearest 1%.

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REMOTE COMPUTING SERVICES - FUNCTION SPECIFIC MARKET FORECAST
BY INDUSTRY SECTOR, 1982 - 1987

INDUSTRY SECTOR	USER EXPENDITURES FORECAST								
	1981 ($M)	81-82 GROWTH (%)	1982 ($M)	1983 ($M)	1984 ($M)	1985 ($M)	1986 ($M)	1987 ($M)	AAGR 82-87 (%)
DISCRETE MANUFACTURING	152	9	165	182	209	246	296	352	16
PROCESS MANUFACTURING	152	13	171	202	240	291	355	426	20
TRANSPORTATION	26	8	29	31	35	40	46	52	13
UTILITIES	81	12	91	102	115	132	153	175	14
BANKING/FINANCE	88	10	97	108	124	145	172	202	16
INSURANCE	90	11	99	113	132	155	183	215	17
MEDICAL	19	17	23	27	32	38	46	55	19
EDUCATION	22	6	23	24	26	29	32	35	9
RETAIL DISTRIBUTION	47	10	51	59	68	83	102	125	19
WHOLESALE DISTRIBUTION	65	7	70	75	84	95	106	119	11
FEDERAL GOVERNMENT	119	9	129	143	160	180	202	228	12
STATE/LOCAL GOVERNMENT	25	12	28	31	36	41	48	57	15
SERVICES	148	9	161	176	197	227	266	311	14
OTHER	54	5	56	64	72	83	96	110	14
TOTAL	1090	10	1190	1340	1530	1790	2100	2460	16

NOTE: Grand totals are rounded to nearest $10 million; therefore columns may not total exactly.
Growth rates are rounded to nearest 1%.

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REMOTE COMPUTING SERVICES - INDUSTRY SPECIFIC MARKET FORECAST
BY INDUSTRY SECTOR, 1982 - 1987

INDUSTRY SECTOR	USER EXPENDITURES FORECAST							
	1981 ($M)	81-82 GROWTH (%)	1982 ($M)	1983 ($M)	1984 ($M)	1985 ($M)	1986 ($M)	1987 ($M)	AAGR 82-87 (%)
DISCRETE MANUFACTURING	424	12	475	547	645	761	898	1042	17
PROCESS MANUFACTURING	58	16	67	81	100	123	154	193	23
TRANSPORTATION	64	15	73	82	99	119	147	182	20
UTILITIES	106	12	119	138	160	184	215	252	16
BANKING/FINANCE	842	17	985	1163	1382	1679	2065	2540	21
INSURANCE	104	11	115	129	146	169	197	228	15
MEDICAL	186	16	216	255	303	363	444	544	20
EDUCATION	11	0	11	11	12	13	14	16	8
RETAIL DISTRIBUTION	362	9	395	438	505	586	694	822	16
WHOLESALE DISTRIBUTION	118	11	131	146	167	192	222	258	14
FEDERAL GOVERNMENT	37	10	41	45	52	61	71	82	15
STATE/LOCAL GOVERNMENT	13	12	15	17	19	21	23	26	12
SERVICES	377	14	429	493	573	670	807	972	18
OTHER	218	13	247	289	341	402	480	574	18
TOTAL	2920	14	3320	3830	4500	5340	6430	7730	18

NOTE: Grand totals are rounded to nearest $10 million; therefore columns may not total exactly.
Growth rates are rounded to nearest 1%.

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REMOTE COMPUTING SERVICES - UTILITY MARKET FORECAST
BY INDUSTRY SECTOR, 1982 - 1987

INDUSTRY SECTOR	USER EXPENDITURES FORECAST								
	1981 ($M)	81-82 GROWTH (%)	1982 ($M)	1983 ($M)	1984 ($M)	1985 ($M)	1986 ($M)	1987 ($M)	AAGR 82-87 (%)
DISCRETE MANUFACTURING	99	7	106	115	131	156	188	230	17
PROCESS MANUFACTURING	227	9	247	271	312	368	450	554	18
TRANSPORTATION	26	5	27	28	31	33	37	41	9
UTILITIES	114	7	122	133	149	167	188	215	12
BANKING/FINANCE	55	7	59	66	75	86	101	118	15
INSURANCE	23	6	24	27	30	33	37	41	11
MEDICAL	9	10	10	11	13	15	17	20	15
EDUCATION	25	0	25	25	26	28	30	32	5
RETAIL DISTRIBUTION	40	2	41	43	49	55	63	73	12
WHOLESALE DISTRIBUTION	27	0	27	27	30	32	35	39	7
FEDERAL GOVERNMENT	278	5	292	310	341	381	431	491	11
STATE/LOCAL GOVERNMENT	38	0	38	38	41	45	49	53	7
SERVICES	70	6	74	81	91	103	116	131	12
OTHER	77	3	79	83	91	101	114	127	10
TOTAL	1110	6	1170	1260	1410	1610	1860	2170	13

NOTE: Grand totals are rounded to nearest $10 million; therefore columns may not total exactly.
Growth rates are rounded to nearest 1%.

INP
MAS2/

PROCESSING FACILITIES MANAGEMENT - TOTAL MARKET FORECAST
BY INDUSTRY SECTOR, 1982 - 1987

INDUSTRY SECTOR	USER EXPENDITURES FORECAST							
	1981 ($M)	81-82 GROWTH (%)	1982 ($M)	1983 ($M)	1984 ($M)	1985 ($M)	1986 ($M)	1987 ($M)	AAGR 82-87 (%)
DISCRETE MANUFACTURING	53	11	59	68	79	93	109	128	17
PROCESS MANUFACTURING	37	13	42	48	55	64	78	92	17
TRANSPORTATION	28	4	29	31	34	38	42	49	11
UTILITIES	12	0	12	13	14	15	16	18	8
BANKING/FINANCE	535	15	615	720	845	1000	1180	1392	18
INSURANCE	275	10	303	339	393	460	538	629	16
MEDICAL	213	20	256	307	374	460	562	685	22
EDUCATION	18	6	19	21	24	28	32	38	14
RETAIL DISTRIBUTION	13	0	13	14	15	16	17	18	6
WHOLESALE DISTRIBUTION	36	4	38	41	44	51	57	63	11
FEDERAL GOVERNMENT	80	30	104	141	172	206	250	303	24
STATE/LOCAL GOVERNMENT	29	3	30	34	37	41	46	50	11
SERVICES	4	0	4	5	5	6	6	7	11
OTHER	12	12	13	14	16	17	19	22	10
TOTAL	1340	14	1540	1790	2110	2490	2950	3490	18

NOTE: Grand totals are rounded to nearest $10 million; therefore columns may not total exactly.
Growth rates are rounded to nearest 1%.

INPUT
MAS2/MAP2

PROCESSING FACILITIES MANAGEMENT - FUNCTION SPECIFIC MARKET FORECAST
BY INDUSTRY SECTOR, 1982 - 1987

INDUSTRY SECTOR	USER EXPENDITURES FORECAST								
	1981 ($M)	81-82 GROWTH (%)	1982 ($M)	1983 ($M)	1984 ($M)	1985 ($M)	1986 ($M)	1987 ($M)	AAGR 82-87 (%)
DISCRETE MANUFACTURING	6	7	6	6	7	8	8	9	9
PROCESS MANUFACTURING	2	9	2	3	3	3	4	4	10
TRANSPORTATION	0	0	0	0	0	0	0	0	0
UTILITIES	2	0	2	2	2	2	2	2	0
BANKING/FINANCE	0	0	0	0	0	0	0	0	0
INSURANCE	0	0	0	0	0	0	0	0	0
MEDICAL	0	0	0	0	0	0	0	0	0
EDUCATION	0	0	0	0	0	0	0	0	0
RETAIL DISTRIBUTION	0	0	0	0	0	0	0	0	0
WHOLESALE DISTRIBUTION	0	0	0	0	0	0	0	0	0
FEDERAL GOVERNMENT	38	5	40	42	45	48	52	56	7
STATE/LOCAL GOVERNMENT	0	0	0	0	0	0	0	0	0
SERVICES	0	0	0	0	0	0	0	0	0
OTHER	0	0	0	0	0	0	0	0	0
TOTAL	50	5	50	50	60	60	70	70	7

NOTE: Grand totals are rounded to nearest $10 million; therefore columns may not total exactly.
Growth rates are rounded to nearest 1%.

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MAS2/N

PROCESSING FACILITIES MANAGEMENT - INDUSTRY SPECIFIC MARKET FORECAST
BY INDUSTRY SECTOR, 1982 - 1987

INDUSTRY SECTOR	USER EXPENDITURES FORECAST								
	1981 ($M)	81-82 GROWTH (%)	1982 ($M)	1983 ($M)	1984 ($M)	1985 ($M)	1986 ($M)	1987 ($M)	AAGR 82-87 (%)
DISCRETE MANUFACTURING	29	11	32	37	43	50	59	69	17
PROCESS MANUFACTURING	30	12	34	38	44	52	63	75	18
TRANSPORTATION	28	5	29	31	34	38	42	49	11
UTILITIES	2	0	2	2	2	2	2	2	0
BANKING/FINANCE	535	15	615	720	845	1000	1180	1392	18
INSURANCE	275	10	303	339	393	460	538	629	16
MEDICAL	213	20	256	307	374	460	562	685	22
EDUCATION	18	8	19	21	24	28	32	38	14
RETAIL DISTRIBUTION	13	3	13	14	15	16	17	18	6
WHOLESALE DISTRIBUTION	32	2	33	36	39	45	50	56	11
FEDERAL GOVERNMENT	0	0	0	0	0	0	0	0	0
STATE/LOCAL GOVERNMENT	9	0	9	10	11	12	14	15	11
SERVICES	4	8	4	5	5	6	6	7	11
OTHER	8	6	8	9	10	11	12	14	10
TOTAL	1200	14	1360	1570	1840	2180	2580	3050	18

NOTE: Grand totals are rounded to nearest $10 million; therefore columns may not total exactly.
Growth rates are rounded to nearest 1%.

INPUT
MAS2/MAP2

PROCESSING FACILITIES MANAGEMENT - UTILITY MARKET FORECAST
BY INDUSTRY SECTOR, 1982 - 1987

INDUSTRY SECTOR	USER EXPENDITURES FORECAST								
	1981 ($M)	81-82 GROWTH (%)	1982 ($M)	1983 ($M)	1984 ($M)	1985 ($M)	1986 ($M)	1987 ($M)	AAGR 82-87 (%)
DISCRETE MANUFACTURING	18	15	21	25	29	35	42	50	19
PROCESS MANUFACTURING	5	19	6	7	8	9	11	13	18
TRANSPORTATION	0	0	0	0	0	0	0	0	0
UTILITIES	8	9	8	9	10	11	12	14	11
BANKING/FINANCE	0	0	0	0	0	0	0	0	0
INSURANCE	0	0	0	0	0	0	0	0	0
MEDICAL	0	0	0	0	0	0	0	0	0
EDUCATION	0	0	0	0	0	0	0	0	0
RETAIL DISTRIBUTION	0	0	0	0	0	0	0	0	0
WHOLESALE DISTRIBUTION	4	5	5	5	5	6	7	7	10
FEDERAL GOVERNMENT	42	52	64	99	127	158	198	247	31
STATE/LOCAL GOVERNMENT	20	10	21	24	26	29	32	35	10
SERVICES	0	0	0	0	0	0	0	0	0
OTHER	4	8	5	5	6	6	7	8	11
TOTAL	100	28	130	170	210	260	310	370	24

NOTE: Grand totals are rounded to nearest $10 million; therefore columns may not total exactly.
Growth rates are rounded to nearest 1%.

BATCH PROCESSING SERVICES - TOTAL MARKET FORECAST
BY INDUSTRY SECTOR, 1982 - 1987

INDUSTRY SECTOR	USER EXPENDITURES FORECAST							
	1981 ($M)	81-82 GROWTH (%)	1982 ($M)	1983 ($M)	1984 ($M)	1985 ($M)	1986 ($M)	1987 ($M)	AAGR 82-87 (%)
DISCRETE MANUFACTURING	465	6	494	532	585	639	695	741	8
PROCESS MANUFACTURING	609	19	723	877	1042	1232	1437	1647	18
TRANSPORTATION	64	6	68	74	79	85	92	98	8
UTILITIES	78	7	84	90	96	103	111	120	8
BANKING/FINANCE	860	10	949	1041	1128	1210	1269	1328	7
INSURANCE	136	9	148	160	172	185	196	206	7
MEDICAL	228	9	249	275	304	332	359	383	9
EDUCATION	65	3	67	69	71	75	77	81	4
RETAIL DISTRIBUTION	234	6	248	265	284	303	321	334	6
WHOLESALE DISTRIBUTION	326	7	348	378	408	434	456	480	7
FEDERAL GOVERNMENT	65	3	67	68	72	76	80	85	5
STATE/LOCAL GOVERNMENT	95	5	100	109	119	130	141	152	9
SERVICES	313	9	342	377	401	427	450	470	7
OTHER	292	3	302	330	359	386	417	447	8
TOTAL	3830	9	4190	4650	5120	5620	6100	6570	9

NOTE: Grand totals are rounded to nearest $10 million; therefore columns may not total exactly.
Growth rates are rounded to nearest 1%.

INPUT
MAS2/MAP2

BATCH PROCESSING SERVICES - FUNCTION SPECIFIC MARKET FORECAST
BY INDUSTRY SECTOR, 1982 - 1987

INDUSTRY SECTOR	USER EXPENDITURES FORECAST								
	1981 ($M)	81-82 GROWTH (%)	1982 ($M)	1983 ($M)	1984 ($M)	1985 ($M)	1986 ($M)	1987 ($M)	AAGR 82-87 (%)
DISCRETE MANUFACTURING	296	6	313	335	369	405	442	471	8
PROCESS MANUFACTURING	100	14	114	132	154	182	215	249	17
TRANSPORTATION	21	8	22	24	25	27	29	31	7
UTILITIES	41	9	45	49	53	57	61	66	8
BANKING/FINANCE	186	12	208	233	256	277	289	297	7
INSURANCE	26	7	28	31	33	35	36	37	6
MEDICAL	31	15	36	42	48	54	59	64	12
EDUCATION	19	3	20	21	21	22	23	24	4
RETAIL DISTRIBUTION	86	12	96	107	119	130	142	153	10
WHOLESALE DISTRIBUTION	149	16	173	200	226	249	271	296	11
FEDERAL GOVERNMENT	12	7	13	13	14	15	16	17	6
STATE/LOCAL GOVERNMENT	20	5	21	23	25	27	29	31	8
SERVICES	84	12	94	107	115	125	133	143	9
OTHER	123	8	132	148	166	183	201	222	11
TOTAL	1190	10	1320	1470	1630	1790	1950	2100	10

NOTE: Grand totals are rounded to nearest $10 million; therefore columns may not total exactly.
       Growth rates are rounded to nearest 1%.

INPUT

BATCH PROCESSING SERVICES - INDUSTRY SPECIFIC MARKET FORECAST
BY INDUSTRY SECTOR, 1982 - 1987

INDUSTRY SECTOR	USER EXPENDITURES FORECAST							
	1981 ($M)	81-82 GROWTH (%)	1982 ($M)	1983 ($M)	1984 ($M)	1985 ($M)	1986 ($M)	1987 ($M)	AAGR 82-87 (%)
DISCRETE MANUFACTURING	93	9	102	114	127	139	153	166	10
PROCESS MANUFACTURING	449	21	544	674	811	966	1130	1299	19
TRANSPORTATION	31	11	34	38	42	46	50	54	9
UTILITIES	13	10	15	16	17	18	19	20	7
BANKING/FINANCE	658	10	724	789	852	911	957	1005	7
INSURANCE	96	9	105	113	122	131	140	147	7
MEDICAL	185	9	201	220	243	264	285	303	8
EDUCATION	30	2	31	32	34	36	37	39	5
RETAIL DISTRIBUTION	114	3	118	123	129	134	138	138	3
WHOLESALE DISTRIBUTION	65	5	68	71	73	76	78	79	3
FEDERAL GOVERNMENT	0	0	0	0	0	0	0	0	0
STATE/LOCAL GOVERNMENT	24	7	25	28	30	33	36	39	9
SERVICES	208	9	227	249	264	279	293	302	6
OTHER	144	0	144	154	164	173	184	191	6
TOTAL	2110	11	2340	2620	2910	3210	3500	3780	10

NOTE: Grand totals are rounded to nearest $10 million; therefore columns may not total exactly.
Growth rates are rounded to nearest 1%.

INPUT
MAS2/MAP2

BATCH PROCESSING SERVICES - UTILITY MARKET FORECAST
BY INDUSTRY SECTOR, 1982 - 1987

INDUSTRY SECTOR	USER EXPENDITURES FORECAST								
	1981 ($M)	81-82 GROWTH (%)	1982 ($M)	1983 ($M)	1984 ($M)	1985 ($M)	1986 ($M)	1987 ($M)	AAGR 82-87 (%)
DISCRETE MANUFACTURING	76	3	79	83	89	95	100	104	6
PROCESS MANUFACTURING	60	9	65	71	77	84	92	99	9
TRANSPORTATION	12	0	12	12	12	12	13	13	3
UTILITIES	24	3	24	25	26	28	31	34	7
BANKING/FINANCE	16	8	17	19	20	22	24	26	9
INSURANCE	14	6	15	16	17	19	20	22	8
MEDICAL	12	5	12	13	13	14	15	16	5
EDUCATION	16	0	16	16	16	17	17	18	3
RETAIL DISTRIBUTION	34	0	34	35	36	39	41	43	5
WHOLESALE DISTRIBUTION	112	-5	107	107	109	109	107	105	0
FEDERAL GOVERNMENT	53	2	54	55	58	61	64	68	5
STATE/LOCAL GOVERNMENT	51	7	54	58	64	70	76	82	9
SERVICES	21	0	21	21	22	23	24	25	4
OTHER	25	4	26	28	29	30	32	34	5
TOTAL	530	2	540	560	590	620	660	690	5

NOTE: Grand totals are rounded to nearest $10 million; therefore columns may not total exactly.
Growth rates are rounded to nearest 1%.

SOFTWARE PRODUCTS - TOTAL MARKET FORECAST
BY INDUSTRY SECTOR, 1982 - 1987

INDUSTRY SECTOR	USER EXPENDITURES FORECAST								
	1981 ($M)	81-82 GROWTH (%)	1982 ($M)	1983 ($M)	1984 ($M)	1985 ($M)	1986 ($M)	1987 ($M)	AAGR 82-87 (%)
DISCRETE MANUFACTURING	861	32	1136	1537	2169	3078	4380	6185	40
PROCESS MANUFACTURING	435	37	594	827	1174	1660	2306	3159	40
TRANSPORTATION	156	29	201	278	398	573	829	1181	42
UTILITIES	130	29	168	215	283	368	478	622	30
BANKING/FINANCE	612	31	801	1106	1614	2285	3238	4586	42
INSURANCE	470	30	611	810	1108	1499	2014	2707	35
MEDICAL	194	44	280	406	582	826	1150	1607	42
EDUCATION	77	18	91	112	137	166	205	253	23
RETAIL DISTRIBUTION	206	33	274	357	501	689	945	1317	37
WHOLESALE DISTRIBUTION	271	38	374	508	712	988	1371	1901	38
FEDERAL GOVERNMENT	345	26	435	557	738	986	1347	1840	33
STATE/LOCAL GOVERNMENT	147	18	174	207	257	318	385	467	22
SERVICES	137	33	183	251	345	474	648	865	37
OTHER	124	31	163	229	321	448	616	835	39
TOTAL	4170	32	5490	7400	10340	14360	19910	27520	38

NOTE: Grand totals are rounded to nearest $10 million; therefore columns may not total exactly.
Growth rates are rounded to nearest 1%.

INPUT
MAS2/MAP2

APPLICATIONS SOFTWARE PRODUCTS - MARKET FORCAST
BY INDUSTRY SECTOR, 1982 - 1987

INDUSTRY SECTOR	USER EXPENDITURES FORECAST								
	1981 ($M)	81-82 GROWTH (%)	1982 ($M)	1983 ($M)	1984 ($M)	1985 ($M)	1986 ($M)	1987 ($M)	AAGR 82-87 (%)
DISCRETE MANUFACTURING	374	32	494	676	980	1392	2019	2927	43
PROCESS MANUFACTURING	135	38	187	261	376	526	742	1047	41
TRANSPORTATION	76	30	98	144	218	329	491	731	49
UTILITIES	40	33	54	71	99	129	168	218	32
BANKING/FINANCE	495	30	644	895	1325	1891	2672	3794	43
INSURANCE	332	29	428	565	774	1045	1411	1905	35
MEDICAL	129	49	192	284	412	594	849	1215	45
EDUCATION	37	22	45	58	73	89	108	132	24
RETAIL DISTRIBUTION	135	35	182	238	334	467	654	935	39
WHOLESALE DISTRIBUTION	205	40	287	391	551	771	1080	1512	39
FEDERAL GOVERNMENT	14	28	18	23	28	35	44	54	24
STATE/LOCAL GOVERNMENT	37	18	43	53	69	84	105	130	25
SERVICES	95	35	128	180	251	347	479	641	38
OTHER	86	30	112	159	223	316	446	616	41
TOTAL	2190	33	2910	4000	5710	8010	11270	15860	40

NOTE: Grand totals are rounded to nearest $10 million; therefore columns may not total exactly.
Growth rates are rounded to nearest 1%.

INF
MAS

SYSTEMS SOFTWARE PRODUCTS - MARKET FORECAST
BY INDUSTRY SECTOR, 1982 - 1987

INDUSTRY SECTOR	USER EXPENDITURES FORECAST							
	1981 ($M)	81-82 GROWTH (%)	1982 ($M)	1983 ($M)	1984 ($M)	1985 ($M)	1986 ($M)	1987 ($M)	AAGR 82-87 (%)
DISCRETE MANUFACTURING	487	32	642	861	1188	1686	2361	3258	38
PROCESS MANUFACTURING	300	36	407	566	798	1134	1564	2112	39
TRANSPORTATION	80	29	103	134	180	249	338	450	34
UTILITIES	90	26	114	144	184	239	310	404	19
BANKING/FINANCE	117	34	157	211	289	404	566	792	38
INSURANCE	138	33	183	245	334	454	603	802	34
MEDICAL	65	36	89	122	170	232	301	392	35
EDUCATION	40	16	46	54	64	77	97	121	21
RETAIL DISTRIBUTION	71	29	92	119	167	222	291	382	33
WHOLESALE DISTRIBUTION	66	33	87	117	161	217	291	389	35
FEDERAL GOVERNMENT	331	26	417	534	710	951	1303	1786	34
STATE/LOCAL GOVERNMENT	110	19	131	154	188	234	280	337	21
SERVICES	42	29	55	71	94	127	169	224	33
OTHER	38	35	51	70	98	132	170	219	34
TOTAL	1970	30	2570	3400	4630	6360	8650	11670	35

NOTE: Grand totals are rounded to nearest $10 million; therefore columns may not total exactly.
Growth rates are rounded to nearest 1%.

INPUT
MAS2/MAP2

EXHIBIT B-21

PROFESSIONAL SERVICES - TOTAL MARKET FORECAST
BY INDUSTRY SECTOR, 1982 - 1987

INDUSTRY SECTOR	USER EXPENDITURES FORECAST								
	1981 ($M)	81-82 GROWTH (%)	1982 ($M)	1983 ($M)	1984 ($M)	1985 ($M)	1986 ($M)	1987 ($M)	AAGR 82-87 (%)
DISCRETE MANUFACTURING	681	12	764	881	1040	1268	1596	2069	22
PROCESS MANUFACTURING	373	16	431	504	599	730	913	1173	22
TRANSPORTATION	97	6	103	112	127	147	168	194	14
UTILITIES	183	16	213	249	300	367	456	566	22
BANKING/FINANCE	311	15	357	421	521	649	817	1029	24
INSURANCE	282	13	318	373	445	536	644	775	19
MEDICAL	100	12	112	126	152	185	227	279	20
EDUCATION	91	3	94	101	116	134	152	172	13
RETAIL DISTRIBUTION	142	7	152	166	184	211	240	274	13
WHOLESALE DISTRIBUTION	116	10	128	141	157	181	209	240	14
FEDERAL GOVERNMENT	1479	13	1667	1905	2217	2605	3088	3578	16
STATE/LOCAL GOVERNMENT	949	5	1000	1076	1183	1355	1571	1817	13
SERVICES	31	8	33	37	43	50	59	69	15
OTHER	159	7	169	181	200	229	264	307	13
TOTAL	4990	11	5540	6280	7280	8640	10400	12540	18

NOTE: Grand totals are rounded to nearest $10 million; therefore columns may not total exactly.
Growth rates are rounded to nearest 1%.

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PROFESSIONAL SERVICES - PROGRAMMING AND ANALYSIS MARKET FORECAST
BY INDUSTRY SECTOR, 1982 - 1987

INDUSTRY SECTOR	USER EXPENDITURES FORECAST							
	1981 ($M)	81-82 GROWTH (%)	1982 ($M)	1983 ($M)	1984 ($M)	1985 ($M)	1986 ($M)	1987 ($M)	AAGR 82-87 (%)
DISCRETE MANUFACTURING	554	12	621	714	835	1003	1243	1604	21
PROCESS MANUFACTURING	290	16	336	393	464	556	684	876	21
TRANSPORTATION	77	5	81	87	98	111	125	141	12
UTILITIES	145	17	170	200	240	293	361	444	21
BANKING/FINANCE	227	15	261	310	385	481	606	763	24
INSURANCE	188	14	214	252	303	366	440	528	20
MEDICAL	84	12	94	107	129	158	196	243	21
EDUCATION	79	5	82	89	102	118	133	150	13
RETAIL DISTRIBUTION	117	7	125	135	149	170	192	217	12
WHOLESALE DISTRIBUTION	95	9	104	115	129	148	171	196	14
FEDERAL GOVERNMENT	928	16	1076	1245	1469	1749	2098	2434	18
STATE/LOCAL GOVERNMENT	786	5	825	883	962	1097	1262	1451	12
SERVICES	25	10	27	30	35	40	47	55	15
OTHER	134	6	142	151	165	187	215	247	12
TOTAL	3730	12	4160	4710	5470	6480	7770	9350	18

NOTE: Grand totals are rounded to nearest $10 million; therefore columns may not total exactly.
Growth rates are rounded to nearest 1%.

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INPUT
MAS2/MAP2

PROFESSIONAL SERVICES - CONSULTING MARKET FORECAST
BY INDUSTRY SECTOR, 1982 - 1987

INDUSTRY SECTOR	USER EXPENDITURES FORECAST								
	1981 ($M)	81-82 GROWTH (%)	1982 ($M)	1983 ($M)	1984 ($M)	1985 ($M)	1986 ($M)	1987 ($M)	AAGR 82-87 (%)
DISCRETE MANUFACTURING	67	17	78	93	118	154	204	265	28
PROCESS MANUFACTURING	44	20	53	65	81	107	144	188	29
TRANSPORTATION	13	12	15	17	20	25	30	37	21
UTILITIES	18	10	20	23	29	36	46	58	24
BANKING/FINANCE	36	15	42	51	64	80	103	132	26
INSURANCE	29	13	33	40	50	64	81	103	26
MEDICAL	11	8	12	13	16	19	23	27	18
EDUCATION	12	0	12	12	14	16	19	22	14
RETAIL DISTRIBUTION	18	10	20	23	26	30	35	42	16
WHOLESALE DISTRIBUTION	12	11	14	15	17	20	23	27	14
FEDERAL GOVERNMENT	145	9	159	181	210	247	291	336	16
STATE/LOCAL GOVERNMENT	109	6	115	126	143	167	198	230	15
SERVICES	6	9	6	7	8	10	12	14	16
OTHER	18	8	20	22	25	30	35	42	16
TOTAL	540	11	600	690	820	1000	1240	1520	21

NOTE: Grand totals are rounded to nearest $10 million; therefore columns may not total exactly.
Growth rates are rounded to nearest 1%.

INP
MAS2

PROFESSIONAL SERVICES - EDUCATION MARKET FORECAST
BY INDUSTRY SECTOR, 1982 - 1987

INDUSTRY SECTOR	USER EXPENDITURES FORECAST							
	1981 ($M)	81-82 GROWTH (%)	1982 ($M)	1983 ($M)	1984 ($M)	1985 ($M)	1986 ($M)	1987 ($M)	AAGR 82-87 (%)
DISCRETE MANUFACTURING	55	9	60	69	82	106	144	195	27
PROCESS MANUFACTURING	34	9	37	41	49	62	80	104	23
TRANSPORTATION	7	7	7	8	9	11	13	16	16
UTILITIES	13	13	15	17	20	25	34	46	25
BANKING/FINANCE	20	15	23	26	32	41	54	72	26
INSURANCE	13	12	14	16	19	23	30	39	22
MEDICAL	0	0	0	0	0	0	0	0	0
EDUCATION	0	0	0	0	0	0	0	0	0
RETAIL DISTRIBUTION	7	9	7	8	9	11	13	15	16
WHOLESALE DISTRIBUTION	7	6	7	8	8	10	11	13	13
FEDERAL GOVERNMENT	68	13	76	90	110	145	196	264	28
STATE/LOCAL GOVERNMENT	47	11	52	58	67	79	97	120	18
SERVICES	0	0	0	0	0	0	0	0	0
OTHER	7	10	7	8	10	12	14	18	19
TOTAL	280	11	310	350	420	520	690	900	24

NOTE: Grand totals are rounded to nearest $10 million; therefore columns may not total exactly.
Growth rates are rounded to nearest 1%.

INPUT
MAS2/MAP2

PROFESSIONAL SERVICES - FACILITIES MANAGEMENT MARKET FORECAST
BY INDUSTRY SECTOR, 1982 - 1987

INDUSTRY SECTOR	USER EXPENDITURES FORECAST								
	1981 ($M)	81-82 GROWTH (%)	1982 ($M)	1983 ($M)	1984 ($M)	1985 ($M)	1986 ($M)	1987 ($M)	AAGR 82-87 (%)
DISCRETE MANUFACTURING	5	0	5	5	5	5	5	5	0
PROCESS MANUFACTURING	5	0	5	5	5	5	5	5	0
TRANSPORTATION	0	0	0	0	0	0	0	0	0
UTILITIES	7	12	8	9	11	13	15	18	18
BANKING/FINANCE	28	11	31	34	40	46	54	62	15
INSURANCE	52	10	57	65	73	83	93	105	13
MEDICAL	5	9	6	6	7	8	8	9	9
EDUCATION	0	0	0	0	0	0	0	0	0
RETAIL DISTRIBUTION	0	0	0	0	0	0	0	0	0
WHOLESALE DISTRIBUTION	2	10	3	3	3	3	4	4	11
FEDERAL GOVERNMENT	337	6	358	389	429	464	503	544	9
STATE/LOCAL GOVERNMENT	7	13	8	9	11	12	14	16	14
SERVICES	0	0	0	0	0	0	0	0	0
OTHER	0	0	0	0	0	0	0	0	0
TOTAL	450	7	480	530	580	640	700	770	10

NOTE: Grand totals are rounded to nearest $10 million; therefore columns may not total exactly.
Growth rates are rounded to nearest 1%.

INP
MAS2

INTEGRATED SYSTEMS - TOTAL MARKET FORECAST
BY INDUSTRY SECTOR, 1982 - 1987

INDUSTRY SECTOR	USER EXPENDITURES FORECAST							
	1981 ($M)	81-82 GROWTH (%)	1982 ($M)	1983 ($M)	1984 ($M)	1985 ($M)	1986 ($M)	1987 ($M)	AAGR 82-87 (%)
DISCRETE MANUFACTURING	779	23	961	1166	1517	2059	2796	3797	32
PROCESS MANUFACTURING	321	19	383	459	599	797	1044	1360	29
TRANSPORTATION	129	14	147	168	202	252	313	390	22
UTILITIES	101	18	120	141	176	221	272	333	23
BANKING/FINANCE	394	21	478	592	767	1030	1343	1751	30
INSURANCE	174	16	201	238	305	386	477	590	24
MEDICAL	141	24	175	218	283	371	485	638	30
EDUCATION	68	9	74	82	94	118	144	176	19
RETAIL DISTRIBUTION	183	21	222	269	354	467	618	819	30
WHOLESALE DISTRIBUTION	187	24	231	285	370	483	625	809	29
FEDERAL GOVERNMENT	58	14	66	77	95	116	140	170	21
STATE/LOCAL GOVERNMENT	43	12	48	54	66	80	97	117	20
SERVICES	234	28	299	405	549	733	958	1253	33
OTHER	72	11	80	93	114	141	180	228	23
TOTAL	2880	21	3480	4250	5490	7250	9490	12430	29

NOTE: Grand totals are rounded to nearest $10 million; therefore columns may not total exactly.
Growth rates are rounded to nearest 1%.

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INPUT
MAS2/MAP2

INTEGRATED SYSTEMS - INDUSTRY SPECIFIC MARKET FORECAST
BY INDUSTRY SECTOR, 1982 - 1987

INDUSTRY SECTOR	USER EXPENDITURES FORECAST								
	1981 ($M)	81-82 GROWTH (%)	1982 ($M)	1983 ($M)	1984 ($M)	1985 ($M)	1986 ($M)	1987 ($M)	AAGR 82-87 (%)
DISCRETE MANUFACTURING	565	25	706	855	1128	1557	2133	2922	33
PROCESS MANUFACTURING	235	20	282	336	446	603	795	1041	30
TRANSPORTATION	85	12	95	107	128	161	200	248	21
UTILITIES	75	18	89	103	127	159	193	233	21
BANKING/FINANCE	295	23	363	454	596	816	1070	1401	31
INSURANCE	60	16	70	80	108	146	188	243	28
MEDICAL	80	22	98	122	161	216	291	393	32
EDUCATION	50	8	54	59	68	86	106	130	19
RETAIL DISTRIBUTION	83	22	101	117	156	206	266	343	28
WHOLESALE DISTRIBUTION	95	26	120	146	191	251	318	404	28
FEDERAL GOVERNMENT	45	16	52	60	75	92	112	136	21
STATE/LOCAL GOVERNMENT	25	7	27	29	36	45	54	64	19
SERVICES	165	30	215	295	401	533	693	900	33
OTHER	25	11	28	32	40	47	57	68	20
TOTAL	1880	22	2300	2790	3660	4920	6480	8530	30

NOTE: Grand totals are rounded to nearest $10 million; therefore columns may not total exactly.
Growth rates are rounded to nearest 1%.

INTEGRATED SYSTEMS - CROSS INDUSTRY MARKET FORECAST
BY INDUSTRY SECTOR, 1982 - 1987

INDUSTRY SECTOR	USER EXPENDITURES FORECAST							
	1981 ($M)	81-82 GROWTH (%)	1982 ($M)	1983 ($M)	1984 ($M)	1985 ($M)	1986 ($M)	1987 ($M)	AAGR 82-87 (%)
DISCRETE MANUFACTURING	214	19	255	311	389	502	663	875	28
PROCESS MANUFACTURING	86	18	101	123	153	194	249	319	26
TRANSPORTATION	44	17	51	61	74	91	113	142	22
UTILITIES	26	20	31	38	49	62	79	100	27
BANKING/FINANCE	99	16	115	138	171	214	273	350	25
INSURANCE	114	15	131	158	197	240	289	347	21
MEDICAL	61	26	77	96	122	155	194	245	26
EDUCATION	18	12	20	23	26	32	38	46	18
RETAIL DISTRIBUTION	100	21	121	152	198	261	352	476	32
WHOLESALE DISTRIBUTION	92	20	110	139	179	232	307	405	30
FEDERAL GOVERNMENT	13	10	14	17	20	24	28	34	19
STATE/LOCAL GOVERNMENT	18	14	21	25	30	35	43	53	20
SERVICES	69	22	84	110	148	200	265	353	33
OTHER	47	9	51	61	74	94	123	160	25
TOTAL	1000	18	1180	1450	1830	2340	3020	3900	27

NOTE: Grand totals are rounded to nearest $10 million; therefore columns may not total exactly.
Growth rates are rounded to nearest 1%.

INPUT
MAS2/MAP2

DISCRETE MANUFACTURING SECTOR - TOTAL MARKET FORECAST
BY DELIVERY MODE, 1982 - 1987

DELIVERY MODE	USER EXPENDITURES FORECAST							
	1981 ($M)	81-82 GROWTH (%)	1982 ($M)	1983 ($M)	1984 ($M)	1985 ($M)	1986 ($M)	1987 ($M)	AAGR 82-87 (%)
REMOTE COMPUTING SERVICES									
FUNCTION SPECIFIC	152	9	165	182	209	246	296	352	16
INDUSTRY SPECIFIC	424	12	475	547	645	761	898	1042	17
UTILITY MARKET	99	7	106	115	131	156	188	230	17
SUBTOTAL	675	11	746	844	985	1163	1382	1624	17
PROCESSING FACILITIES MANAGEMENT									
FUNCTION SPECIFIC	6	7	6	6	7	8	8	9	9
INDUSTRY SPECIFIC	29	11	32	37	43	50	59	69	17
UTILITY MARKET	18	15	21	25	29	35	42	50	19
SUBTOTAL	53	11	59	68	79	93	109	128	17
BATCH PROCESSING SERVICES									
FUNCTION SPECIFIC	296	6	313	335	369	405	442	471	8
INDUSTRY SPECIFIC	93	9	102	114	127	139	153	166	10
UTILITY MARKET	76	3	79	83	89	95	100	104	6
SUBTOTAL	465	6	494	532	585	639	695	741	8
TOTAL PROCESSING SERVICES									
FUNCTION SPECIFIC	454	7	484	523	585	659	746	832	11
INDUSTRY SPECIFIC	546	12	609	698	815	950	1110	1277	16
UTILITY MARKET	193	7	206	223	249	286	330	384	13
GRAND TOTAL PROCESSING SERVICES	1193	9	1299	1444	1649	1895	2186	2493	14
SOFTWARE PRODUCTS									
SYSTEMS SOFTWARE	487	32	642	861	1188	1686	2361	3258	38
APPLICATIONS SOFTWARE	374	32	494	676	980	1392	2019	2927	43
SUBTOTAL	861	32	1136	1537	2168	3078	4380	6185	40
PROFESSIONAL SERVICES									
EDUCATION SERVICES	55	9	60	69	82	106	144	195	27
CONSULTING SERVICES	67	17	78	93	118	154	204	265	28
PROGRAMMING & ANALYSIS	554	12	621	714	835	1003	1243	1604	21
FACILITIES MANAGEMENT	5	0	5	5	5	5	5	5	0
SUBTOTAL	681	12	764	881	1040	1268	1596	2069	22
INTEGRATED SYSTEMS									
INDUSTRY SPECIFIC	565	25	706	855	1128	1557	2133	2922	33
CROSS INDUSTRY	214	19	255	311	389	502	663	875	28
SUBTOTAL	779	23	961	1166	1517	2059	2796	3797	32
GRAND TOTAL	3510	18	4160	5030	6370	8300	10960	14540	28

NOTE: Grand totals are rounded to nearest $10 million; therefore columns may not total exactly.
Growth rates are rounded to nearest 1%.

INP
MAP2

PROCESS MANUFACTURING SECTOR - TOTAL MARKET FORECAST
BY DELIVERY MODE, 1982 - 1987

DELIVERY MODE	USER EXPENDITURES FORECAST							
	1981 ($M)	81-82 GROWTH (%)	1982 ($M)	1983 ($M)	1984 ($M)	1985 ($M)	1986 ($M)	1987 ($M)	AAGR 82-87 (%)
REMOTE COMPUTING SERVICES									
FUNCTION SPECIFIC	152	13	171	202	240	291	355	426	20
INDUSTRY SPECIFIC	58	16	67	81	100	123	154	193	23
UTILITY MARKET	227	9	247	271	312	368	450	554	18
SUBTOTAL	437	11	485	554	652	782	959	1173	19
PROCESSING FACILITIES MANAGEMENT									
FUNCTION SPECIFIC	2	9	2	3	3	3	4	4	10
INDUSTRY SPECIFIC	30	12	34	38	44	52	63	75	18
UTILITY MARKET	5	19	6	7	8	9	11	13	18
SUBTOTAL	37	13	42	48	55	64	78	92	17
BATCH PROCESSING SERVICES									
FUNCTION SPECIFIC	100	14	114	132	154	182	215	249	17
INDUSTRY SPECIFIC	449	21	544	674	811	966	1130	1299	19
UTILITY MARKET	60	9	65	71	77	84	92	99	9
SUBTOTAL	609	19	723	877	1042	1232	1437	1647	18
TOTAL PROCESSING SERVICES									
FUNCTION SPECIFIC	254	13	287	337	397	476	574	679	19
INDUSTRY SPECIFIC	537	20	645	793	955	1141	1347	1567	19
UTILITY MARKET	292	9	318	349	397	461	553	666	16
GRAND TOTAL PROCESSING SERVICES	1083	15	1250	1479	1749	2079	2474	2912	18
SOFTWARE PRODUCTS									
SYSTEMS SOFTWARE	300	36	407	566	798	1134	1564	2112	39
APPLICATIONS SOFTWARE	135	38	187	261	376	526	742	1047	41
SUBTOTAL	435	37	594	827	1174	1660	2306	3159	40
PROFESSIONAL SERVICES									
EDUCATION SERVICES	34	9	37	41	49	62	80	104	23
CONSULTING SERVICES	44	20	53	65	81	107	144	188	29
PROGRAMMING & ANALYSIS	290	16	336	393	464	556	684	876	21
FACILITIES MANAGEMENT	5	0	5	5	5	5	5	5	0
SUBTOTAL	373	16	431	504	599	730	913	1173	22
INTEGRATED SYSTEMS									
INDUSTRY SPECIFIC	235	20	282	336	446	603	795	1041	30
CROSS INDUSTRY	86	18	101	123	153	194	249	319	26
SUBTOTAL	321	19	383	459	599	797	1044	1360	29
GRAND TOTAL	2210	20	2660	3270	4120	5270	6740	8600	26

NOTE: Grand totals are rounded to nearest $10 million; therefore columns may not total exactly.
Growth rates are rounded to nearest 1%.

INPUT
MAS2/MAP2

TRANSPORTATION SECTOR - TOTAL MARKET FORECAST
BY DELIVERY MODE, 1982 - 1987

	USER EXPENDITURES FORECAST							
DELIVERY MODE	1981 ($M)	81-82 GROWTH (%)	1982 ($M)	1983 ($M)	1984 ($M)	1985 ($M)	1986 ($M)	1987 ($M)	AAGR 82-87 (%)
REMOTE COMPUTING SERVICES									
FUNCTION SPECIFIC	26	8	29	31	35	40	46	52	13
INDUSTRY SPECIFIC	64	15	73	82	99	119	147	182	20
UTILITY MARKET	26	5	27	28	31	33	37	41	9
SUBTOTAL	116	11	129	141	165	192	230	275	16
PROCESSING FACILITIES MANAGEMENT									
FUNCTION SPECIFIC	0	0	0	0	0	0	0	0	0
INDUSTRY SPECIFIC	28	5	29	31	34	38	42	49	11
UTILITY MARKET	0	0	0	0	0	0	0	0	0
SUBTOTAL	28	4	29	31	34	38	42	49	11
BATCH PROCESSING SERVICES									
FUNCTION SPECIFIC	21	8	22	24	25	27	29	31	7
INDUSTRY SPECIFIC	31	11	34	38	42	46	50	54	9
UTILITY MARKET	12	0	12	12	12	12	13	13	3
SUBTOTAL	64	6	68	74	79	85	92	98	8
TOTAL PROCESSING SERVICES									
FUNCTION SPECIFIC	47	9	51	55	60	67	75	83	10
INDUSTRY SPECIFIC	123	11	136	151	175	203	239	285	16
UTILITY MARKET	38	1	39	40	43	45	50	54	7
GRAND TOTAL PROCESSING SERVICES	208	9	226	246	278	315	364	423	13
SOFTWARE PRODUCTS									
SYSTEMS SOFTWARE	80	29	103	134	180	249	338	450	34
APPLICATIONS SOFTWARE	76	30	98	144	218	329	491	731	49
SUBTOTAL	156	29	201	278	398	578	829	1181	42
PROFESSIONAL SERVICES									
EDUCATION SERVICES	7	7	7	8	9	11	13	16	16
CONSULTING SERVICES	13	12	15	17	20	25	30	37	21
PROGRAMMING & ANALYSIS	77	5	81	87	98	111	125	141	12
FACILITIES MANAGEMENT	0	0	0	0	0	0	0	0	0
SUBTOTAL	97	6	103	112	127	147	168	194	14
INTEGRATED SYSTEMS									
INDUSTRY SPECIFIC	85	12	95	107	128	161	200	248	21
CROSS INDUSTRY	44	17	52	61	74	91	113	142	22
SUBTOTAL	129	14	147	168	202	252	313	390	22
GRAND TOTAL	590	15	680	800	1010	1290	1670	2190	26

NOTE: Grand totals are rounded to nearest $10 million; therefore columns may not total exactly.
Growth rates are rounded to nearest 1%.

INPU

UTILITIES SECTOR - TOTAL MARKET FORECAST
BY DELIVERY MODE, 1982 - 1987

DELIVERY MODE	USER EXPENDITURES FORECAST								
	1981 ($M)	81-82 GROWTH (%)	1982 ($M)	1983 ($M)	1984 ($M)	1985 ($M)	1986 ($M)	1987 ($M)	AAGR 82-87 (%)
REMOTE COMPUTING SERVICES									
FUNCTION SPECIFIC	81	12	91	102	115	132	153	175	14
INDUSTRY SPECIFIC	106	12	119	138	160	184	215	252	16
UTILITY MARKET	114	7	122	133	149	167	188	215	12
SUBTOTAL	301	10	332	373	424	483	556	642	14
PROCESSING FACILITIES MANAGEMENT									
FUNCTION SPECIFIC	2	0	2	2	2	2	2	2	0
INDUSTRY SPECIFIC	2	0	2	2	2	2	2	2	0
UTILITY MARKET	8	9	8	9	10	11	12	14	11
SUBTOTAL	12	0	12	13	14	15	16	18	8
BATCH PROCESSING SERVICES									
FUNCTION SPECIFIC	41	9	45	49	53	57	61	66	8
INDUSTRY SPECIFIC	13	10	15	16	17	18	19	20	7
UTILITY MARKET	24	3	24	25	26	28	31	34	7
SUBTOTAL	78	7	84	90	96	103	111	120	8
TOTAL PROCESSING SERVICES									
FUNCTION SPECIFIC	124	11	138	153	170	191	216	243	12
INDUSTRY SPECIFIC	121	12	136	156	179	204	236	274	15
UTILITY MARKET	146	5	154	167	185	206	231	263	11
GRAND TOTAL PROCESSING SERVICES	391	9	428	476	534	601	683	780	13
SOFTWARE PRODUCTS									
SYSTEMS SOFTWARE	90	26	114	144	184	239	310	404	29
APPLICATIONS SOFTWARE	40	33	54	71	99	129	168	218	32
SUBTOTAL	130	29	168	215	283	368	478	622	30
PROFESSIONAL SERVICES									
EDUCATION SERVICES	13	13	15	17	20	25	34	45	25
CONSULTING SERVICES	18	10	20	23	29	36	46	58	24
PROGRAMMING & ANALYSIS	145	17	170	200	240	293	361	444	21
FACILITIES MANAGEMENT	7	12	8	9	11	13	15	19	19
SUBTOTAL	183	16	213	249	300	367	456	566	22
INTEGRATED SYSTEMS									
INDUSTRY SPECIFIC	75	18	89	103	127	159	193	233	21
CROSS INDUSTRY	26	20	31	38	49	62	79	100	27
SUBTOTAL	101	18	120	141	176	221	272	333	23
GRAND TOTAL	810	15	930	1080	1290	1560	1890	2300	20

NOTE: Grand totals are rounded to nearest $10 million; therefore columns may not total exactly.
Growth rates are rounded to nearest 1%.

INPUT
MAS2/MAP2

BANKING AND FINANCE SECTOR - TOTAL MARKET FORECAST
BY DELIVERY MODE, 1982 - 1987

DELIVERY MODE	USER EXPENDITURES FORECAST							
	1981 ($M)	81-82 GROWTH (%)	1982 ($M)	1983 ($M)	1984 ($M)	1985 ($M)	1986 ($M)	1987 ($M)	AAGR 82-87 (%)
REMOTE COMPUTING SERVICES									
FUNCTION SPECIFIC	88	10	97	108	124	145	172	202	16
INDUSTRY SPECIFIC	842	17	985	1163	1382	1679	2065	2540	21
UTILITY MARKET	55	7	59	66	75	86	101	118	15
SUBTOTAL	985	16	1141	1337	1581	1910	2338	2860	20
PROCESSING FACILITIES MANAGEMENT									
FUNCTION SPECIFIC	0	0	0	0	0	0	0	0	0
INDUSTRY SPECIFIC	535	15	615	720	845	1000	1180	1392	18
UTILITY MARKET	0	0	0	0	0	0	0	0	0
SUBTOTAL	535	15	615	720	845	1000	1180	1392	18
BATCH PROCESSING SERVICES									
FUNCTION SPECIFIC	186	12	208	233	256	277	288	297	7
INDUSTRY SPECIFIC	658	10	724	789	852	911	957	1005	7
UTILITY MARKET	16	8	17	19	20	22	24	26	9
SUBTOTAL	860	10	949	1041	1128	1210	1269	1328	7
TOTAL PROCESSING SERVICES									
FUNCTION SPECIFIC	274	11	305	341	380	422	460	499	10
INDUSTRY SPECIFIC	2035	14	2324	2672	3079	3590	4202	4937	16
UTILITY MARKET	71	7	76	85	95	108	125	144	14
GRAND TOTAL PROCESSING SERVICES	2380	14	2705	3098	3554	4120	4787	5580	16
SOFTWARE PRODUCTS									
SYSTEMS SOFTWARE	117	34	157	211	289	404	566	792	38
APPLICATIONS SOFTWARE	495	30	644	895	1325	1881	2672	3794	43
SUBTOTAL	612	31	801	1106	1614	2285	3238	4586	42
PROFESSIONAL SERVICES									
EDUCATION SERVICES	20	15	23	26	32	41	54	72	26
CONSULTING SERVICES	36	15	42	51	64	80	103	132	26
PROGRAMMING & ANALYSIS	227	15	261	310	385	481	606	763	24
FACILITIES MANAGEMENT	28	11	31	34	40	46	54	62	15
SUBTOTAL	311	15	357	421	521	648	817	1029	24
INTEGRATED SYSTEMS									
INDUSTRY SPECIFIC	295	23	363	454	596	816	1070	1401	31
CROSS INDUSTRY	99	16	115	138	171	214	273	350	25
SUBTOTAL	394	21	478	592	767	1030	1343	1751	30
GRAND TOTAL	3700	17	4340	5220	6460	8080	10190	12950	24

NOTE: Grand totals are rounded to nearest $10 million; therefore columns may not total exactly.
Growth rates are rounded to nearest 1%.

INP
MAS2

INSURANCE SECTOR - TOTAL MARKET FORECAST
BY DELIVERY MODE, 1982 - 1987

DELIVERY MODE	USER EXPENDITURES FORECAST								
	1981 ($M)	81-82 GROWTH (%)	1982 ($M)	1983 ($M)	1984 ($M)	1985 ($M)	1986 ($M)	1987 ($M)	AAGR 82-87 (%)
REMOTE COMPUTING SERVICES									
FUNCTION SPECIFIC	90	11	99	113	132	155	183	215	17
INDUSTRY SPECIFIC	104	11	115	129	146	169	197	228	15
UTILITY MARKET	23	6	24	27	30	33	37	41	11
SUBTOTAL	217	10	238	269	308	357	417	484	15
PROCESSING FACILITIES MANAGEMENT									
FUNCTION SPECIFIC	0	0	0	0	0	0	0	0	0
INDUSTRY SPECIFIC	275	10	303	339	393	460	538	629	16
UTILITY MARKET	0	0	0	0	0	0	0	0	0
SUBTOTAL	275	10	303	339	393	460	538	629	16
BATCH PROCESSING SERVICES									
FUNCTION SPECIFIC	26	7	28	31	33	35	36	37	6
INDUSTRY SPECIFIC	96	9	105	113	122	131	140	147	7
UTILITY MARKET	14	6	15	16	17	19	20	22	8
SUBTOTAL	136	9	148	160	172	185	196	206	7
TOTAL PROCESSING SERVICES									
FUNCTION SPECIFIC	116	9	127	144	165	190	219	252	15
INDUSTRY SPECIFIC	475	10	523	581	661	760	875	1004	14
UTILITY MARKET	37	5	39	43	47	52	57	63	10
GRAND TOTAL PROCESSING SERVICES	628	10	689	768	873	1002	1151	1319	14
SOFTWARE PRODUCTS									
SYSTEMS SOFTWARE	138	33	183	245	334	454	603	802	34
APPLICATIONS SOFTWARE	332	29	428	565	774	1045	1411	1905	35
SUBTOTAL	470	30	611	810	1108	1499	2014	2707	35
PROFESSIONAL SERVICES									
EDUCATION SERVICES	13	12	14	16	19	23	30	39	22
CONSULTING SERVICES	29	13	33	40	50	64	81	103	26
PROGRAMMING & ANALYSIS	188	14	214	252	303	366	440	528	20
FACILITIES MANAGEMENT	52	10	57	65	73	83	93	105	13
SUBTOTAL	282	13	318	373	445	536	644	775	19
INTEGRATED SYSTEMS									
INDUSTRY SPECIFIC	60	16	70	80	108	146	188	243	28
CROSS INDUSTRY	114	15	131	158	197	240	289	347	21
SUBTOTAL	174	16	201	238	305	386	477	590	24
GRAND TOTAL	1550	17	1820	2190	2730	3420	4290	5390	24

NOTE: Grand totals are rounded to nearest $10 million; therefore columns may not total exactly.
Growth rates are rounded to nearest 1%.

INPUT
MAS2/MAP2

MEDICAL SECTOR - TOTAL MARKET FORECAST
BY DELIVERY MODE, 1982 - 1987

DELIVERY MODE	USER EXPENDITURES FORECAST								
	1981 ($M)	81-82 GROWTH (%)	1982 ($M)	1983 ($M)	1984 ($M)	1985 ($M)	1986 ($M)	1987 ($M)	AAGR 82-87 (%)
REMOTE COMPUTING SERVICES									
FUNCTION SPECIFIC	19	17	23	27	32	38	46	55	19
INDUSTRY SPECIFIC	186	16	216	255	303	363	444	544	20
UTILITY MARKET	9	10	10	11	13	15	17	20	15
SUBTOTAL	214	16	249	293	348	416	507	619	20
PROCESSING FACILITIES MANAGEMENT									
FUNCTION SPECIFIC	0	0	0	0	0	0	0	0	0
INDUSTRY SPECIFIC	213	20	256	307	374	460	562	685	22
UTILITY MARKET	0	0	0	0	0	0	0	0	0
SUBTOTAL	213	20	256	307	374	460	562	685	22
BATCH PROCESSING SERVICES									
FUNCTION SPECIFIC	31	15	36	42	48	54	59	64	12
INDUSTRY SPECIFIC	185	9	201	220	243	264	285	303	8
UTILITY MARKET	12	5	12	13	13	14	15	16	5
SUBTOTAL	228	9	249	275	304	332	359	383	9
TOTAL PROCESSING SERVICES									
FUNCTION SPECIFIC	50	18	59	69	80	92	105	119	15
INDUSTRY SPECIFIC	584	15	673	782	920	1087	1291	1532	18
UTILITY MARKET	21	5	22	24	26	29	32	36	10
GRAND TOTAL PROCESSING SERVICES	655	15	754	875	1026	1208	1428	1687	17
SOFTWARE PRODUCTS									
SYSTEMS SOFTWARE	65	36	88	122	170	232	301	392	35
APPLICATIONS SOFTWARE	129	49	192	284	412	594	849	1215	45
SUBTOTAL	194	44	280	406	582	826	1150	1607	42
PROFESSIONAL SERVICES									
EDUCATION SERVICES	0	0	0	0	0	0	0	0	0
CONSULTING SERVICES	11	8	12	13	16	19	23	27	18
PROGRAMMING & ANALYSIS	84	12	94	107	129	158	196	243	21
FACILITIES MANAGEMENT	5	9	6	6	7	8	8	9	9
SUBTOTAL	100	12	112	126	152	185	227	279	20
INTEGRATED SYSTEMS									
INDUSTRY SPECIFIC	80	22	98	122	161	216	291	393	32
CROSS INDUSTRY	61	26	77	96	122	155	194	245	26
SUBTOTAL	141	24	175	218	283	371	485	638	30
GRAND TOTAL	1090	21	1320	1630	2040	2590	3290	4210	26

NOTE: Grand totals are rounded to nearest $10 million; therefore columns may not total exactly.
Growth rates are rounded to nearest 1%.

INP
MAS2/

EDUCATION SECTOR - TOTAL MARKET FORECAST
BY DELIVERY MODE, 1982 - 1987

DELIVERY MODE	USER EXPENDITURES FORECAST								
	1981 ($M)	81-82 GROWTH (%)	1982 ($M)	1983 ($M)	1984 ($M)	1985 ($M)	1986 ($M)	1987 ($M)	AAGR 82-87 (%)
REMOTE COMPUTING SERVICES									
FUNCTION SPECIFIC	22	6	23	24	26	29	32	35	9
INDUSTRY SPECIFIC	11	0	11	11	12	13	14	16	8
UTILITY MARKET	25	0	25	25	26	28	30	32	5
SUBTOTAL	58	2	59	60	64	70	76	83	7
PROCESSING FACILITIES MANAGEMENT									
FUNCTION SPECIFIC	0	0	0	0	0	0	0	0	0
INDUSTRY SPECIFIC	18	8	19	21	24	28	32	38	14
UTILITY MARKET	0	0	0	0	0	0	0	0	0
SUBTOTAL	18	6	19	21	24	28	32	38	14
BATCH PROCESSING SERVICES									
FUNCTION SPECIFIC	19	3	20	21	21	22	23	24	4
INDUSTRY SPECIFIC	30	2	31	32	34	36	37	39	5
UTILITY MARKET	16	0	16	16	16	17	17	18	3
SUBTOTAL	65	3	67	69	71	75	77	81	4
TOTAL PROCESSING SERVICES									
FUNCTION SPECIFIC	41	5	43	45	47	51	55	59	7
INDUSTRY SPECIFIC	59	4	61	64	70	77	83	93	9
UTILITY MARKET	41	0	41	41	42	45	47	50	4
GRAND TOTAL PROCESSING SERVICES	141	3	145	150	159	173	185	202	7
SOFTWARE PRODUCTS									
SYSTEMS SOFTWARE	40	16	46	54	64	77	97	121	21
APPLICATIONS SOFTWARE	37	22	45	58	73	89	108	132	24
SUBTOTAL	77	18	91	112	137	166	205	253	23
PROFESSIONAL SERVICES									
EDUCATION SERVICES	0	0	0	0	0	0	0	0	0
CONSULTING SERVICES	12	0	12	12	14	16	19	22	14
PROGRAMMING & ANALYSIS	79	5	82	89	102	118	133	150	13
FACILITIES MANAGEMENT	0	0	0	0	0	0	0	0	0
SUBTOTAL	91	3	94	101	116	134	152	172	13
INTEGRATED SYSTEMS									
INDUSTRY SPECIFIC	50	8	54	59	68	86	106	130	19
CROSS INDUSTRY	18	12	20	23	26	32	38	46	18
SUBTOTAL	68	9	74	82	94	118	144	176	19
GRAND TOTAL	380	7	400	450	500	590	690	800	15

NOTE: Grand totals are rounded to nearest $10 million; therefore columns may not total exactly.
Growth rates are rounded to nearest 1%.

INPUT
MAS2/MAP

RETAIL DISTRIBUTION SECTOR - TOTAL MARKET FORECAST ST
BY DELIVERY MODE, 1982 - 1987

DELIVERY MODE	USER EXPENDITURES FORECAST								
	1981 ($M)	81-82 GROWTH (%)	1982 ($M)	1983 ($M)	1984 ($M)	1985 ($M)	1986 ($M)	1987 ($M)	AAGR 82-87 (%)
REMOTE COMPUTING SERVICES									
FUNCTION SPECIFIC	47	10	51	59	68	83	102	125	19
INDUSTRY SPECIFIC	362	9	395	438	505	586	694	822	16
UTILITY MARKET	40	2	41	43	49	55	63	73	12
SUBTOTAL	449	9	487	540	622	724	859	1020	16
PROCESSING FACILITIES MANAGEMENT									
FUNCTION SPECIFIC	0	0	0	0	0	0	0	0	0
INDUSTRY SPECIFIC	13	3	13	14	15	16	17	18	6
UTILITY MARKET	0	0	0	0	0	0	0	0	0
SUBTOTAL	13	0	13	14	15	16	17	18	6
BATCH PROCESSING SERVICES									
FUNCTION SPECIFIC	86	12	96	107	119	130	142	153	10
INDUSTRY SPECIFIC	114	3	118	123	129	134	138	138	3
UTILITY MARKET	34	0	34	35	36	39	41	43	5
SUBTOTAL	234	6	248	265	284	303	321	334	6
TOTAL PROCESSING SERVICES									
FUNCTION SPECIFIC	133	11	147	166	187	213	244	278	13
INDUSTRY SPECIFIC	489	8	526	575	649	736	849	978	13
UTILITY MARKET	74	1	75	78	85	94	104	116	9
GRAND TOTAL PROCESSING SERVICES	696	8	748	819	921	1043	1197	1371	13
SOFTWARE PRODUCTS									
SYSTEMS SOFTWARE	71	29	92	119	167	222	291	382	33
APPLICATIONS SOFTWARE	135	35	182	238	334	467	654	935	39
SUBTOTAL	206	33	274	357	501	689	945	1317	37
PROFESSIONAL SERVICES									
EDUCATION SERVICES	7	9	7	8	9	11	13	15	16
CONSULTING SERVICES	18	10	20	23	26	30	35	42	16
PROGRAMMING & ANALYSIS	117	7	125	135	149	170	192	217	12
FACILITIES MANAGEMENT	0	0	0	0	0	0	0	0	0
SUBTOTAL	142	7	152	166	184	211	240	274	13
INTEGRATED SYSTEMS									
INDUSTRY SPECIFIC	83	22	101	117	156	206	266	343	28
CROSS INDUSTRY	100	21	121	152	198	261	352	476	32
SUBTOTAL	183	21	222	269	354	467	618	819	30
GRAND TOTAL	1230	14	1400	1610	1960	2410	3000	3780	22

NOTE: Grand totals are rounded to nearest $10 million; therefore columns may not total exactly.
Growth rates are rounded to nearest 1%.

INF
MAS

WHOLESALE DISTRIBUTION SECTOR - TOTAL MARKET FORECAST
BY DELIVERY MODE, 1982 - 1987

DELIVERY MODE	USER EXPENDITURES FORECAST								
	1981 ($M)	81-82 GROWTH (%)	1982 ($M)	1983 ($M)	1984 ($M)	1985 ($M)	1986 ($M)	1987 ($M)	AAGR 82-87 (%)
REMOTE COMPUTING SERVICES									
FUNCTION SPECIFIC	65	7	70	75	84	95	106	119	11
INDUSTRY SPECIFIC	118	11	131	146	167	192	222	258	14
UTILITY MARKET	27	0	27	27	30	32	35	39	7
SUBTOTAL	210	9	228	248	281	319	363	416	13
PROCESSING FACILITIES MANAGEMENT									
FUNCTION SPECIFIC	0	0	0	0	0	0	0	0	0
INDUSTRY SPECIFIC	32	2	33	36	39	45	50	56	11
UTILITY MARKET	4	5	5	5	5	6	7	7	10
SUBTOTAL	36	4	38	41	44	51	57	63	11
BATCH PROCESSING SERVICES									
FUNCTION SPECIFIC	149	16	173	200	226	249	271	296	11
INDUSTRY SPECIFIC	65	5	68	71	73	76	78	79	3
UTILITY MARKET	112	-5	107	107	109	109	107	105	00
SUBTOTAL	326	7	348	378	408	434	456	480	7
TOTAL PROCESSING SERVICES									
FUNCTION SPECIFIC	214	14	243	275	310	344	377	415	11
INDUSTRY SPECIFIC	215	8	232	253	279	313	350	393	11
UTILITY MARKET	143	-3	139	139	144	147	149	151	2
GRAND TOTAL PROCESSING SERVICES	572	7	614	667	733	804	876	959	9
SOFTWARE PRODUCTS									
SYSTEMS SOFTWARE	66	33	87	117	161	217	291	389	35
APPLICATIONS SOFTWARE	205	40	287	391	551	771	1080	1512	39
SUBTOTAL	271	38	374	508	712	988	1371	1901	38
PROFESSIONAL SERVICES									
EDUCATION SERVICES	7	6	7	8	8	10	11	13	13
CONSULTING SERVICES	12	11	14	15	17	20	23	27	14
PROGRAMMING & ANALYSIS	95	9	104	115	129	148	171	196	14
FACILITIES MANAGEMENT	2	10	3	3	3	3	4	4	11
SUBTOTAL	116	10	128	141	157	181	209	240	14
INTEGRATED SYSTEMS									
INDUSTRY SPECIFIC	95	26	120	146	191	251	318	404	28
CROSS INDUSTRY	92	20	111	139	179	232	307	405	30
SUBTOTAL	187	24	231	285	370	483	625	809	29
GRAND TOTAL	1150	17	1350	1600	1970	2460	3080	3910	24

NOTE: Grand totals are rounded to nearest $10 million; therefore columns may not total exactly.
Growth rates are rounded to nearest 1%.

INPUT
MAS2/MAP2

FEDERAL GOVERNMENT SECTOR - TOTAL MARKET FORECAST
BY DELIVERY MODE, 1982 - 1987

DELIVERY MODE	USER EXPENDITURES FORECAST								
	1981 ($M)	81-82 GROWTH (%)	1982 ($M)	1983 ($M)	1984 ($M)	1985 ($M)	1986 ($M)	1987 ($M)	AAGR 82-87 (%)
REMOTE COMPUTING SERVICES									
FUNCTION SPECIFIC	119	9	129	143	160	180	202	228	12
INDUSTRY SPECIFIC	37	10	41	45	52	61	70	82	15
UTILITY MARKET	278	5	292	310	341	381	431	491	11
SUBTOTAL	434	6	462	498	553	622	703	801	12
PROCESSING FACILITIES MANAGEMENT									
FUNCTION SPECIFIC	38	5	40	42	45	48	52	56	7
INDUSTRY SPECIFIC	0	0	0	0	0	0	0	0	0
UTILITY MARKET	42	52	64	99	127	158	198	247	31
SUBTOTAL	80	30	104	141	172	206	250	303	24
BATCH PROCESSING SERVICES									
FUNCTION SPECIFIC	12	7	13	13	14	15	16	17	6
INDUSTRY SPECIFIC	0	0	0	0	0	0	0	0	0
UTILITY MARKET	53	2	54	55	58	61	64	68	5
SUBTOTAL	65	3	67	68	72	76	80	85	5
TOTAL PROCESSING SERVICES									
FUNCTION SPECIFIC	169	8	182	198	219	243	270	301	11
INDUSTRY SPECIFIC	37	11	41	45	52	61	70	82	15
UTILITY MARKET	373	10	410	464	526	600	693	806	14
GRAND TOTAL PROCESSING SERVICES	579	9	633	707	797	904	1033	1189	13
SOFTWARE PRODUCTS									
SYSTEMS SOFTWARE	331	26	417	534	710	951	1303	1786	34
APPLICATIONS SOFTWARE	14	28	18	23	28	35	44	54	24
SUBTOTAL	345	26	435	557	738	986	1347	1840	33
PROFESSIONAL SERVICES									
EDUCATION SERVICES	68	13	76	90	110	145	196	264	28
CONSULTING SERVICES	145	9	159	181	210	247	291	336	16
PROGRAMMING & ANALYSIS	928	16	1076	1245	1469	1749	2098	2434	18
FACILITIES MANAGEMENT	337	6	358	389	428	464	503	544	9
SUBTOTAL	1478	13	1669	1905	2217	2605	3088	3578	16
INTEGRATED SYSTEMS									
INDUSTRY SPECIFIC	45	16	52	60	75	92	112	136	21
CROSS INDUSTRY	13	10	14	17	20	24	28	34	19
SUBTOTAL	58	14	66	77	95	116	140	170	21
GRAND TOTAL	2460	14	2800	3250	3850	4610	5610	6780	19

NOTE: Grand totals are rounded to nearest $10 million; therefore columns may not total exactly.
Growth rates are rounded to nearest 1%.

INP
MAS2

STATE AND LOCAL GOVERNMENT SECTOR - TOTAL MARKET FORECAST
BY DELIVERY MODE, 1982 - 1987

DELIVERY MODE	USER EXPENDITURES FORECAST								
	1981 ($M)	81-82 GROWTH (%)	1982 ($M)	1983 ($M)	1984 ($M)	1985 ($M)	1986 ($M)	1987 ($M)	AAGR 82-87 (%)
REMOTE COMPUTING SERVICES									
FUNCTION SPECIFIC	25	12	28	31	36	41	48	57	15
INDUSTRY SPECIFIC	13	12	15	17	19	21	23	26	12
UTILITY MARKET	38	0	38	38	41	45	49	53	7
SUBTOTAL	76	7	81	86	96	107	120	136	11
PROCESSING FACILITIES MANAGEMENT									
FUNCTION SPECIFIC	0	0	0	0	0	0	0	0	0
INDUSTRY SPECIFIC	9	0	9	10	11	12	14	15	11
UTILITY MARKET	20	10	21	24	26	29	32	35	10
SUBTOTAL	29	3	30	34	37	41	46	50	11
BATCH PROCESSING SERVICES									
FUNCTION SPECIFIC	20	5	21	23	25	227	29	31	8
INDUSTRY SPECIFIC	24	7	25	28	30	33	36	39	9
UTILITY MARKET	51	7	54	58	64	70	76	82	9
SUBTOTAL	95	5	100	109	119	330	141	152	9
TOTAL PROCESSING SERVICES									
FUNCTION SPECIFIC	45	9	49	54	61	268	77	88	12
INDUSTRY SPECIFIC	46	7	49	55	60	66	73	80	10
UTILITY MARKET	109	4	113	120	131	144	157	170	8
GRAND TOTAL PROCESSING SERVICES	200	6	211	229	252	478	307	338	10
SOFTWARE PRODUCTS									
SYSTEMS SOFTWARE	110	19	131	154	188	234	290	337	21
APPLICATIONS SOFTWARE	37	18	43	53	69	84	105	130	25
SUBTOTAL	147	18	174	207	257	318	385	467	22
PROFESSIONAL SERVICES									
EDUCATION SERVICES	47	11	52	58	67	79	97	120	18
CONSULTING SERVICES	109	6	115	126	143	167	198	230	15
PROGRAMMING & ANALYSIS	786	5	825	883	962	1097	1262	1451	12
FACILITIES MANAGEMENT	7	13	8	9	11	12	14	16	14
SUBTOTAL	949	5	1000	1076	1183	1355	1571	1817	13
INTEGRATED SYSTEMS									
INDUSTRY SPECIFIC	25	7	27	29	36	45	54	64	19
CROSS INDUSTRY	18	14	21	25	30	35	43	53	20
SUBTOTAL	43	12	48	54	66	80	97	117	20
GRAND TOTAL	1340	7	1430	1570	1760	2230	2360	2740	14

NOTE: Grand totals are rounded to nearest $10 million; therefore columns may not total exactly.
Growth rates are rounded to nearest 1%.

INPUT
MAS2/MAP2

SERVICES SECTOR - TOTAL MARKET FORECAST
BY DELIVERY MODE, 1982 - 1987

DELIVERY MODE	USER EXPENDITURES FORECAST								
	1981 ($M)	81-82 GROWTH (%)	1982 ($M)	1983 ($M)	1984 ($M)	1985 ($M)	1986 ($M)	1987 ($M)	AAGR 82-87 (%)
REMOTE COMPUTING SERVICES									
FUNCTION SPECIFIC	148	9	161	176	197	227	266	311	14
INDUSTRY SPECIFIC	377	14	429	493	573	670	807	972	18
UTILITY MARKET	70	6	74	81	91	103	116	131	12
SUBTOTAL	595	12	664	750	861	1000	1189	1414	16
PROCESSING FACILITIES MANAGEMENT									
FUNCTION SPECIFIC	0	0	0	0	0	0	0	0	0
INDUSTRY SPECIFIC	4	8	4	5	5	6	6	7	11
UTILITY MARKET	0	0	0	0	0	0	0	0	0
SUBTOTAL	4	0	4	5	5	6	6	7	11
BATCH PROCESSING SERVICES									
FUNCTION SPECIFIC	84	12	94	107	115	125	133	143	9
INDUSTRY SPECIFIC	208	9	227	249	264	279	293	302	6
UTILITY MARKET	21	0	21	21	22	23	24	25	4.
SUBTOTAL	313	9	342	377	401	427	450	470	7
TOTAL PROCESSING SERVICES									
FUNCTION SPECIFIC	232	10	255	283	312	352	399	454	12
INDUSTRY SPECIFIC	589	12	660	747	842	955	1106	1281	14
UTILITY MARKET	91	4	95	102	113	126	140	156	10
GRAND TOTAL PROCESSING SERVICES	912	11	1010	1132	1267	1433	1645	1891	13
SOFTWARE PRODUCTS									
SYSTEMS SOFTWARE	42	29	55	71	94	127	169	224	33
APPLICATIONS SOFTWARE	95	35	128	180	251	347	479	641	38
SUBTOTAL	137	33	183	251	345	474	648	865	37
PROFESSIONAL SERVICES									
EDUCATION SERVICES	0	0	0	0	0	0	0	0	0
CONSULTING SERVICES	6	9	6	7	8	10	12	14	16
PROGRAMMING & ANALYSIS	25	10	27	30	35	40	47	55	15
FACILITIES MANAGEMENT	0	0	0	0	0	0	0	0	0
SUBTOTAL	31	8	33	37	43	50	59	69	15
INTEGRATED SYSTEMS									
INDUSTRY SPECIFIC	165	30	215	295	401	533	693	900	33
CROSS INDUSTRY	69	22	84	110	148	200	265	353	33
SUBTOTAL	234	28	299	405	549	733	958	1253	33
GRAND TOTAL	1310	16	1530	1830	2200	2690	3310	4080	22

NOTE: Grand totals are rounded to nearest $10 million; therefore columns may not total exactly.
Growth rates are rounded to nearest 1%.

- 200 -

OTHER SECTOR - TOTAL MARKET FORECAST
BY DELIVERY MODE, 1982 - 1987

DELIVERY MODE	USER EXPENDITURES FORECAST								
	1981 ($M)	81-82 GROWTH (%)	1982 ($M)	1983 ($M)	1984 ($M)	1985 ($M)	1986 ($M)	1987 ($M)	AAGR 82-87 (%)
REMOTE COMPUTING SERVICES									
FUNCTION SPECIFIC	54	5	56	64	72	83	96	110	14
INDUSTRY SPECIFIC	218	13	247	289	341	402	480	574	18
UTILITY MARKET	77	3	79	83	91	101	114	127	10
SUBTOTAL	349	9	382	436	504	586	690	811	16
PROCESSING FACILITIES MANAGEMENT									
FUNCTION SPECIFIC	0	0	0	0	0	0	0	0	0
INDUSTRY SPECIFIC	8	6	8	9	10	11	12	14	10
UTILITY MARKET	4	8	5	5	6	6	7	8	11
SUBTOTAL	12	12	13	14	16	17	19	22	10
BATCH PROCESSING SERVICES									
FUNCTION SPECIFIC	123	8	132	148	166	183	201	222	11
INDUSTRY SPECIFIC	144	0	144	154	164	173	184	191	6
UTILITY MARKET	25	4	26	28	29	30	32	34	5
SUBTOTAL	292	3	302	330	359	386	417	447	8
TOTAL PROCESSING SERVICES									
FUNCTION SPECIFIC	177	6	188	212	238	266	297	332	12
INDUSTRY SPECIFIC	370	8	399	452	515	586	676	779	14
UTILITY MARKET	106	4	110	116	126	137	153	169	9
GRAND TOTAL PROCESSING SERVICES	653	7	697	780	879	989	1126	1279	13
SOFTWARE PRODUCTS									
SYSTEMS SOFTWARE	38	35	51	70	98	132	170	219	34
APPLICATIONS SOFTWARE	86	30	112	159	223	316	446	616	41
SUBTOTAL	124	31	163	229	321	448	616	835	39
PROFESSIONAL SERVICES									
EDUCATION SERVICES	7	10	7	8	10	12	14	18	19
CONSULTING SERVICES	18	8	20	22	25	30	35	42	16
PROGRAMMING & ANALYSIS	134	6	142	151	165	187	215	247	12
FACILITIES MANAGEMENT	0	0	0	0	0	0	0	0	0
SUBTOTAL	159	7	169	181	200	229	264	307	13
INTEGRATED SYSTEMS									
INDUSTRY SPECIFIC	25	11	28	32	40	47	57	68	20
CROSS INDUSTRY	47	9	52	61	74	94	123	160	25
SUBTOTAL	72	11	80	93	114	141	180	228	23
GRAND TOTAL	1010	10	1110	1280	1510	1810	2190	2650	19

NOTE: Grand totals are rounded to nearest $10 million; therefore columns may not total exactly.
Growth rates are rounded to nearest 1%.

INPUT
MAS2/MAP2

INFORMATION SERVICES - TOTAL MARKET FORECAST
BY DELIVERY MODE, 1982 - 1987

DELIVERY MODE	USER EXPENDITURES FORECAST								
	1981 ($M)	81-82 GROWTH (%)	1982 ($M)	1983 ($M)	1984 ($M)	1985 ($M)	1986 ($M)	1987 ($M)	AAGR 82-87 (%)
REMOTE COMPUTING SERVICES									
FUNCTION SPECIFIC	1088	10	1193	1336	1531	1785	2103	2462	16
INDUSTRY SPECIFIC	2921	14	3319	3831	4502	5343	6432	7729	18
UTILITY MARKET	1108	6	1171	1259	1408	1605	1858	2165	13
SUBTOTAL	5117	11	5683	6426	7441	8733	10393	12356	17
PROCESSING FACILITIES MANAGEMENT									
FUNCTION SPECIFIC	48	5	50	53	57	61	66	71	7
INDUSTRY SPECIFIC	1196	14	1358	1568	1839	2178	2577	3050	18
UTILITY MARKET	100	28	129	173	211	255	309	373	24
SUBTOTAL	1344	14	1537	1794	2107	2494	2952	3494	18
BATCH PROCESSING SERVICES									
FUNCTION SPECIFIC	1193	10	1315	1465	1626	1787	1945	2101	10
INDUSTRY SPECIFIC	2111	11	2337	2620	2908	3207	3501	3782	10
UTILITY MARKET	525	2	536	560	590	623	656	689	5
SUBTOTAL	3829	9	4188	4645	5124	5617	6102	6572	9
TOTAL PROCESSING SERVICES									
FUNCTION SPECIFIC	2329	10	2558	2854	3214	3633	4114	4634	13
INDUSTRY SPECIFIC	6228	13	7014	8019	9249	10728	12510	14561	16
UTILITY MARKET	1733	6	1836	1992	2209	2483	2823	3227	12
GRAND TOTAL PROCESSING SERVICES	10290	11	11408	12865	14672	16844	19447	22422	14
SOFTWARE PRODUCTS									
SYSTEMS SOFTWARE	1974	30	2574	3401	4626	6357	8646	11667	35
APPLICATIONS SOFTWARE	2191	33	2913	3999	5714	8007	11266	15856	40
SUBTOTAL	4165	32	5487	7400	10340	14364	19912	27523	38
PROFESSIONAL SERVICES									
EDUCATION SERVICES	277	11	307	350	415	524	687	902	24
CONSULTING SERVICES	540	11	598	687	821	1004	1243	1524	21
PROGRAMMING & ANALYSIS	3727	12	4158	4714	5466	6477	7772	9349	18
FACILITIES MANAGEMENT	449	7	480	526	582	639	701	768	10
SUBTOTAL	4993	11	5543	6277	7284	8644	10403	12543	18
INTEGRATED SYSTEMS									
INDUSTRY SPECIFIC	1883	22	2298	2793	3661	4917	6475	8528	30
CROSS INDUSTRY	1001	18	1183	1452	1829	2336	3017	3902	27
SUBTOTAL	2884	21	3481	4245	5490	7253	9492	12430	29
GRAND TOTAL	22330	16	25920	30790	37790	47110	59250	74920	24

NOTE: Grand totals are rounded to nearest $10 million; therefore columns may not total exactly.
Growth rates are rounded to nearest 1%.

INP
MAS2

APPENDIX C: RECONCILIATION OF DATA BASE WITH
1981 FORECASTS

APPENDIX C: RECONCILIATION OF DATA BASE WITH 1981 FORECASTS

- Each year INPUT examines the forecasts it provided to clients in previous years in light of the new data obtained from:

    - Current year research.

    - Actual performance of vendors as reported by annual reports, 10Ks, and press releases.

    - Company data from INPUT's CAMP directory data base.

- In Exhibits C-1 through C-15 three comparisons are made:

    - A comparison of the 1982 sizing of the 1981 market with the 1981 estimate of that market.

    - A comparison of the 1982 sizing of the 1987 market with the 1981 estimate of that market.

    - A comparison of the five-year AAGR found in this year's report with the five-year AAGR forecast in the 1981 report.

INPUT

EXHIBIT C-1

TOTAL INFORMATION SERVICES - DATABASE RECONCILIATION
OF MARKET FORECAST, BY DELIVERY MODE
($ millions)

DELIVERY MODE	USER EXPENDITURES						AAGR FORECAST IN '81 REPORT	AAGR FORECAST IN '82 REPORT
	1981 FORECAST OF '81 MARKET	1982 REPORT OF '81 MARKET	DIFFERENCE AS % OF 1981 MARKET	1931 FORECAST OF '87 MARKET	1982 FORECAST OF '87 MARKET	DIFFERENCE AS % OF 1982 FORECAST		
REMOTE COMPUTING SERVICES								
FUNCTION SPECIFIC	1060	1083	3	2934	2462	-19	19	16
INDUSTRY SPECIFIC	2850	2921	2	9089	7729	-18	22	18
UTILITY MARKET	1084	1108	2	2802	2165	-29	18	13
SUBTOTAL	4994	5117	2	15155	12356	-23	21	17
PROCESSING FACILITIES MANAGEMENT								
FUNCTION SPECIFIC	50	48	-4	94	71	-33	12	7
INDUSTRY SPECIFIC	1189	1196	1	3792	3050	-24	22	18
UTILITY MARKET	114	100	-12	352	373	6	20	24
SUBTOTAL	1353	1344	-1	4141	3494	-19	21	18
BATCH PROCESSING SERVICES								
FUNCTION SPECIFIC	1050	1193	14	1946	2101	7	11	10
INDUSTRY SPECIFIC	1843	2111	15	3119	3782	18	9	10
UTILITY MARKET	451	525	16	549	689	20	3	5
SUBTOTAL	3344	3829	15	5608	6572	15	9	9
TOTAL PROCESSING SERVICES								
FUNCTION SPECIFIC	2160	2329	8	4909	4634	-6	15	13
INDUSTRY SPECIFIC	5882	6228	6	15610	14561	-7	18	16
UTILITY MARKET	1649	1733	5	3715	3227	-15	15	12
SUBTOTAL	9691	10290	6	24222	22422	-8	17	14
SOFTWARE PRODUCTS								
SYSTEMS SOFTWARE	1906	1974	4	12879	11667	-10	38	35
APPLICATIONS SOFTWARE	1670	2191	31	7724	15856	51	27	40
SUBTOTAL	3576	4165	16	20537	27523	25	33	38
PROFESSIONAL SERVICES								
EDUCATION SERVICES	NA	277	NA	NA	902	NA	NA	24
CONSULTING SERVICES	NA	540	NA	NA	1524	NA	NA	21
PROGRAMMING & ANALYSIS	4310	3727	-14	18883	9349	-102	30	18
FACILITIES MANAGEMENT	452	449	-1	876	768	-14	12	10
SUBTOTAL	4762	4993	5	20073	12543	-60	29	18
GRAND TOTAL	18029	19448	8	65011	62488	-4	24	23

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EXHIBIT C-2

DISCRETE MANUFACTURING SECTOR - DATABASE RECONCILIATION
OF MARKET FORECAST, BY DELIVERY MODE
($ millions)

DELIVERY MODE	USER EXPENDITURES						AAGR FORECAST IN '81 REPORT	AAGR FORECAST IN '82 REPORT
	1981 FORECAST OF '81 MARKET	1982 REPORT OF '81 MARKET	DIFFERENCE AS % OF 1981 MARKET	1981 FORECAST OF '87 MARKET	1982 FORECAST OF '87 MARKET	DIFFERENCE AS % OF 1982 FORECAST		
REMOTE COMPUTING SERVICES								
FUNCTION SPECIFIC	145	152	5	338	352	4	15	16
INDUSTRY SPECIFIC	410	424	3	1464	1042	-40	25	17
UTILITY MARKET	94	99	5	231	230	00	16	17
SUBTOTAL	649	675	4	2052	1624	-26	22	17
PROCESSING FACILITIES MANAGEMENT								
FUNCTION SPECIFIC	6	6	0	13	9	-40	14	9
INDUSTRY SPECIFIC	30	29	-3	87	69	-27	20	17
UTILITY MARKET	21	18	-14	68	50	-35	22	19
SUBTOTAL	57	53	-7	166	128	-30	20	17
BATCH PROCESSING SERVICES								
FUNCTION SPECIFIC	255	296	16	369	471	22	6	8
INDUSTRY SPECIFIC	81	93	15	137	166	17	9	10
UTILITY MARKET	66	76	15	85	104	18	4	6
SUBTOTAL	402	465	16	581	741	22	6	8
TOTAL PROCESSING SERVICES								
FUNCTION SPECIFIC	406	454	12	726	832	13	10	11
INDUSTRY SPECIFIC	521	546	5	1701	1277	-33	23	16
UTILITY MARKET	181	193	7	377	384	2	13	13
SUBTOTAL	1108	1193	8	2769	2493	-11	17	14
SOFTWARE PRODUCTS								
SYSTEMS SOFTWARE	464	487	5	3205	3258	2	38	38
APPLICATIONS SOFTWARE	272	374	38	1444	2927	51	30	43
SUBTOTAL	736	861	17	4620	6185	25	35	40
PROFESSIONAL SERVICES								
EDUCATION SERVICES	NA	55	NA	NA	195	NA	NA	27
CONSULTING SERVICES	NA	67	NA	NA	265	NA	NA	28
PROGRAMMING & ANALYSIS	612	554	-9	3082	1604	-92	33	21
FACILITIES MANAGEMENT	5	5	0	5	5	0	0	0
SUBTOTAL	617	681	10	3133	2069	-51	33	22
GRAND TOTAL	2461	2735	11	13007	10747	-21	33	27

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EXHIBIT C-3

PROCESS MANUFACTURING SECTOR - DATABASE RECONCILIATION
OF MARKET FORECAST, BY DELIVERY MODE
($ millions)

DELIVERY MODE	USER EXPENDITURES						AAGR FORECAST IN '81 REPORT	AAGR FORECAST IN '82 REPORT
	1981 FORECAST OF '81 MARKET	1982 REPORT OF '81 MARKET	DIFFERENCE AS % OF 1981 MARKET	1981 FORECAST OF '87 MARKET	1982 FORECAST OF '87 MARKET	DIFFERENCE AS % OF 1982 FORECAST		
REMOTE COMPUTING SERVICES								
FUNCTION SPECIFIC	150	152	1	721	426	-69	32	20
INDUSTRY SPECIFIC	58	58	0	275	193	-43	31	23
UTILITY MARKET	227	227	0	785	554	-42	24	18
SUBTOTAL	435	437	0	1779	1173	-52	28	19
PROCESSING FACILITIES MANAGEMENT								
FUNCTION SPECIFIC	2	2	0	5	4	-37	20	10
INDUSTRY SPECIFIC	33	30	-9	124	75	-65	26	18
UTILITY MARKET	5	5	0	19	13	-44	26	18
SUBTOTAL	40	37	-8	149	92	-62	26	17
BATCH PROCESSING SERVICES								
FUNCTION SPECIFIC	87	100	15	196	249	21	14	17
INDUSTRY SPECIFIC	393	449	14	1213	1299	7	21	19
UTILITY MARKET	48	60	25	67	99	33	5	9
SUBTOTAL	528	609	15	1487	1647	10	19	18
TOTAL PROCESSING SERVICES								
FUNCTION SPECIFIC	239	254	6	940	679	-38	27	19
INDUSTRY SPECIFIC	484	537	11	1622	1567	-3	23	19
UTILITY MARKET	280	292	4	878	666	-32	22	16
SUBTOTAL	1003	1083	8	3332	2912.	-14	23	18
SOFTWARE PRODUCTS								
SYSTEMS SOFTWARE	288	300	4	2566	2112	-21	45	39
APPLICATIONS SOFTWARE	103	135	31	651	1047	38	35	41
SUBTOTAL	391	435	11	3273	3159	-4	43	40
PROFESSIONAL SERVICES								
EDUCATION SERVICES	NA	34	NA	NA	104	NA	NA	23
CONSULTING SERVICES	NA	44	NA	NA	188	NA	NA	29
PROGRAMMING & ANALYSIS	319	290	-9	1668	876	-90	34	21
FACILITIES MANAGEMENT	5	5	0	5	5	0	0	0
SUBTOTAL	324	373	15	1708	1173	-46	34	22
GRAND TOTAL	1718	1891	10	8351	7244	-15	31	26

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EXHIBIT C-4

TRANSPORTATION SECTOR - DATABASE RECONCILIATION
OF MARKET FORECAST, BY DELIVERY MODE
($ millions)

DELIVERY MODE	USER EXPENDITURES						AAGR FORECAST IN '81 REPORT	AAGR FORECAST IN '82 REPORT
	1981 FORECAST OF '81 MARKET	1982 REPORT OF '81 MARKET	DIFFERENCE AS % OF 1981 MARKET	1981 FORECAST OF '87 MARKET	1982 FORECAST OF '87 MARKET	DIFFERENCE AS % OF 1982 FORECAST		
REMOTE COMPUTING SERVICES								
FUNCTION SPECIFIC	25	26	4	52	52	-0	13	13
INDUSTRY SPECIFIC	62	64	3	218	182	-20	24	20
UTILITY MARKET	24	26	8	53	41	-28	15	9
SUBTOTAL	111	116	5	320	275	-17	20	16
PROCESSING FACILITIES MANAGEMENT								
FUNCTION SPECIFIC	0	0	0	0	0	0	0	0
INDUSTRY SPECIFIC	30	28	-7	76	49	-55	18	11
UTILITY MARKET	0	0	0	0	0	0	0	0
SUBTOTAL	30	28	-7	76	49	-55	18	11
BATCH PROCESSING SERVICES								
FUNCTION SPECIFIC	19	21	11	33	31	-6	10	7
INDUSTRY SPECIFIC	27	31	15	43	54	20	8	9
UTILITY MARKET	10	12	20	10	13	21	0	3
SUBTOTAL	56	64	14	85	98	13	7	8
TOTAL PROCESSING SERVICES								
FUNCTION SPECIFIC	44	47	7	85	83	-3	12	10
INDUSTRY SPECIFIC	119	123	3	343	285	-21	20	16
UTILITY MARKET	34	38	12	64	54	-19	12	7
SUBTOTAL	197	208	6	488	422	-16	17	13
SOFTWARE PRODUCTS								
SYSTEMS SOFTWARE	79	80	1	493	450	-9	36	34
APPLICATIONS SOFTWARE	56	76	36	418	731	43	38	49
SUBTOTAL	135	156	16	925	1181	22	37	42
PROFESSIONAL SERVICES								
EDUCATION SERVICES	NA	7	NA	NA	16	NA	NA	16
CONSULTING SERVICES	NA	13	NA	NA	37	NA	NA	21
PROGRAMMING & ANALYSIS	84	77	-8	377	141	-167	32	12
FACILITIES MANAGEMENT	0	0	0	0	0	0	0	0
SUBTOTAL	84	97	15	384	194	-98	32	14
GRAND TOTAL	416	461	11	1830	1797	-2	28	28

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EXHIBIT C-5

UTILITIES SECTOR - DATABASE RECONCILIATION
OF MARKET FORECAST, BY DELIVERY MODE
($ millions)

DELIVERY MODE	USER EXPENDITURES						AAGR FORECAST IN '81 REPORT	AAGR FORECAST IN '82 REPORT
	1981 FORECAST OF '81 MARKET	1982 REPORT OF '81 MARKET	DIFFERENCE AS % OF 1981 MARKET	1981 FORECAST OF '87 MARKET	1982 FORECAST OF '87 MARKET	DIFFERENCE AS % OF 1982 FORECAST		
REMOTE COMPUTING SERVICES								
FUNCTION SPECIFIC	80	81	1	192	175	-9	16	14
INDUSTRY SPECIFIC	105	106	1	329	252	-31	22	16
UTILITY MARKET	111	114	3	209	215	3	11	12
SUBTOTAL	296	301	2	740	642	-15	17	14
PROCESSING FACILITIES MANAGEMENT								
FUNCTION SPECIFIC	2	2	0	2	2	0	0	0
INDUSTRY SPECIFIC	2	2	0	2	2	0	0	0
UTILITY MARKET	8	8	0	15	14	-7	11	11
SUBTOTAL	12	12	0	18	18	-1	7	8
BATCH PROCESSING SERVICES								
FUNCTION SPECIFIC	37	41	11	59	66	11	8	8
INDUSTRY SPECIFIC	11	13	18	14	20	32	3	7
UTILITY MARKET	20	24	20	21	34	37	0	7
SUBTOTAL	68	78	15	94	120	22	5	8
TOTAL PROCESSING SERVICES								
FUNCTION SPECIFIC	119	124	4	257	243	-6	14	12
INDUSTRY SPECIFIC	118	121	3	338	274	-23	20	15
UTILITY MARKET	139	146	5	248	263	6	10	11
SUBTOTAL	376	391	4	855	780	-10	15	13
SOFTWARE PRODUCTS								
SYSTEMS SOFTWARE	88	90	2	455	404	-13	32	29
APPLICATIONS SOFTWARE	33	40	21	118	218	46	22	32
SUBTOTAL	121	130	7	584	622	6	30	30
PROFESSIONAL SERVICES								
EDUCATION SERVICES	NA	13	NA	NA	46	NA	NA	25
CONSULTING SERVICES	NA	18	NA	NA	58	NA	NA	24
PROGRAMMING & ANALYSIS	163	145	-11	602	444	-36	25	21
FACILITIES MANAGEMENT	7	7	0	19	18	-5	18	18
SUBTOTAL	170	183	8	633	566	-12	25	22
GRAND TOTAL	667	704	6	2059	1968	-5	21	19

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EXHIBIT C-6

BANKING AND FINANCE SECTOR - DATABASE RECONCILIATION
OF MARKET FORECAST, BY DELIVERY MODE
($ millions)

DELIVERY MODE	USER EXPENDITURES						AAGR FORECAST IN '81 REPORT	AAGR FORECAST IN '82 REPORT
	1981 FORECAST OF '81 MARKET	1982 REPORT OF '81 MARKET	DIFFERENCE AS % OF 1981 MARKET	1981 FORECAST OF '87 MARKET	1982 FORECAST OF '87 MARKET	DIFFERENCE AS % OF 1982 FORECAST		
REMOTE COMPUTING SERVICES								
FUNCTION SPECIFIC	85	89	4	198	202	2	15	16
INDUSTRY SPECIFIC	819	842	3	2570	2540	-1	21	21
UTILITY MARKET	52	55	6	110	118	7	13	15
SUBTOTAL	956	985	3	2855	2860	0	20	20
PROCESSING FACILITIES MANAGEMENT								
FUNCTION SPECIFIC	0	0	0	0	0	0	0	0
INDUSTRY SPECIFIC	397	535	35	1266	1392	9	22	18
UTILITY MARKET	0	0	0	0	0	0	0	0
SUBTOTAL	397	535	35	1266	1392	9	22	18
BATCH PROCESSING SERVICES								
FUNCTION SPECIFIC	161	186	16	253	297	15	8	7
INDUSTRY SPECIFIC	569	658	16	741	1005	26	4	7
UTILITY MARKET	12	16	33	23	26	11	12	9
SUBTOTAL	742	860	16	1013	1328	24	5	7
TOTAL PROCESSING SERVICES								
FUNCTION SPECIFIC	246	274	11	456	499	9	11	10
INDUSTRY SPECIFIC	1785	2035	14	4540	4937	8	17	16
UTILITY MARKET	64	71	11	134	144	7	13	14
SUBTOTAL	2095	2380	14	5104	5580	9	16	16
SOFTWARE PRODUCTS								
SYSTEMS SOFTWARE	113	117	4	753	792	5	37	38
APPLICATIONS SOFTWARE	393	495	26	1286	3794	66	18	43
SUBTOTAL	506	612	21	2023	4586	56	23	42
PROFESSIONAL SERVICES								
EDUCATION SERVICES	NA	20	NA	NA	72	NA	NA	26
CONSULTING SERVICES	NA	36	NA	NA	132	NA	NA	26
PROGRAMMING & ANALYSIS	252	227	-10	1074	763	-41	28	24
FACILITIES MANAGEMENT	28	28	0	80	62	-29	20	15
SUBTOTAL	280	311	11	1193	1029	-16	28	24
GRAND TOTAL	2881	3303	15	8525	11195	24	19	24

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EXHIBIT C-7

INSURANCE SECTOR - DATABASE RECONCILIATION
OF MARKET FORECAST, BY DELIVERY MODE
($ millions)

DELIVERY MODE	USER EXPENDITURES						AAGR FORECAST IN '81 REPORT	AAGR FORECAST IN '82 REPORT
	1981 FORECAST OF '81 MARKET	1982 REPORT OF '81 MARKET	DIFFERENCE AS % OF 1981 MARKET	1981 FORECAST OF '87 MARKET	1982 FORECAST OF '87 MARKET	DIFFERENCE AS % OF 1982 FORECAST		
REMOTE COMPUTING SERVICES								
FUNCTION SPECIFIC	89	90	1	219	215	-2	16	17
INDUSTRY SPECIFIC	102	104	2	292	228	-28	20	15
UTILITY MARKET	22	23	5	41	41	00	11	11
SUBTOTAL	213	217	2	560	484	-16	18	15
PROCESSING FACILITIES MANAGEMENT								
FUNCTION SPECIFIC	0	0	0	0	0	0	0	0
INDUSTRY SPECIFIC	363	275	-24	1092	629	-74	21	16
UTILITY MARKET	0	0	0	0	0	0	0	0
SUBTOTAL	363	275	-24	1092	629	-74	21	16
BATCH PROCESSING SERVICES								
FUNCTION SPECIFIC	24	26	8	36	37	4	7	6
INDUSTRY SPECIFIC	84	96	14	120	147	18	6	7
UTILITY MARKET	11	14	27	15	22	31	5	8
SUBTOTAL	119	136	14	170	206	17	6	7
TOTAL PROCESSING SERVICES								
FUNCTION SPECIFIC	113	116	3	250	252	1	14	15
INDUSTRY SPECIFIC	549	475	-13	1494	1004	-49	19	14
UTILITY MARKET	33	37	12	56	63	11	9	10
SUBTOTAL	695	628	-10	1813	1319	-37	18	14
SOFTWARE PRODUCTS								
SYSTEMS SOFTWARE	132	138	5	854	802	-6	37	34
APPLICATIONS SOFTWARE	264	332	26	781	1905	59	17	35
SUBTOTAL	396	470	19	1631	2707	40	25	35
PROFESSIONAL SERVICES								
EDUCATION SERVICES	NA	13	NA	NA	39	NA	NA	22
CONSULTING SERVICES	NA	29	NA	NA	103	NA	NA	26
PROGRAMMING & ANALYSIS	209	188	-10	765	528	-45	25	20
FACILITIES MANAGEMENT	52	52	0	123	105	-18	16	13
SUBTOTAL	261	282	8	874	775	-13	23	19
GRAND TOTAL	1352	1390	2	4348	4801	9	21	24

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EXHIBIT C-8

MEDICAL SECTOR - DATABASE RECONCILIATION
OF MARKET FORECAST, BY DELIVERY MODE
($ millions)

DELIVERY MODE	USER EXPENDITURES						AASR FORECAST IN '81 REPORT	AASR FORECAST IN '82 REPORT
	1981 FORECAST OF '81 MARKET	1982 REPORT OF '81 MARKET	DIFFERENCE AS % OF 1981 MARKET	1981 FORECAST OF '87 MARKET	1982 FORECAST OF '87 MARKET	DIFFERENCE AS % OF 1982 FORECAST		
REMOTE COMPUTING SERVICES								
FUNCTION SPECIFIC	19	19	0	69	55	-25	25	19
INDUSTRY SPECIFIC	180	186	3	608	544	-12	23	20
UTILITY MARKET	8	9	13	22	20	-10	19	15
SUBTOTAL	207	214	3	699	619	-13	23	20
PROCESSING FACILITIES MANAGEMENT								
FUNCTION SPECIFIC	0	0	0	0	0	0	0	0
INDUSTRY SPECIFIC	240	213	-11	729	685	-6	20	22
UTILITY MARKET	0	0	0	0	0	0	0	0
SUBTOTAL	240	213	-11	729	685	-6	20	22
BATCH PROCESSING SERVICES								
FUNCTION SPECIFIC	28	31	11	63	64	1	15	12
INDUSTRY SPECIFIC	159	185	16	199	303	34	3	8
UTILITY MARKET	10	12	20	11	16	34	0	5
SUBTOTAL	197	228	16	274	383	28	5	9
TOTAL PROCESSING SERVICES								
FUNCTION SPECIFIC	47	50	6	134	119	-13	20	15
INDUSTRY SPECIFIC	579	584	1	1498	1532	2	17	18
UTILITY MARKET	18	21	17	33	36	7	11	10
SUBTOTAL	644	655	2	1652	1687	2	17	17
SOFTWARE PRODUCTS								
SYSTEMS SOFTWARE	63	65	3	509	392	-30	43	35
APPLICATIONS SOFTWARE	93	129	39	561	1215	54	33	45
SUBTOTAL	156	194	24	1069	1607	33	37	42
PROFESSIONAL SERVICES								
EDUCATION SERVICES	NA	0	NA	NA	0	NA	NA	0
CONSULTING SERVICES	NA	11	NA	NA	27	NA	NA	18
PROGRAMMING & ANALYSIS	94	84	-11	271	243	-12	19	21
FACILITIES MANAGEMENT	6	5	-17	12	9	-28	12	9
SUBTOTAL	100	100	0	286	279	-3	19	20
GRAND TOTAL	900	949	5	3065	3573	14	22	26

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EXHIBIT C-9

EDUCATION SECTOR - DATABASE RECONCILIATION
OF MARKET FORECAST, BY DELIVERY MODE
($ millions)

DELIVERY MODE	USER EXPENDITURES						AAGR FORECAST IN '81 REPORT	AAGR FORECAST IN '82 REPORT
	1981 FORECAST OF '81 MARKET	1982 REPORT OF '81 MARKET	DIFFERENCE AS % OF 1981 MARKET	1981 FORECAST OF '87 MARKET	1982 FORECAST OF '87 MARKET	DIFFERENCE AS % OF 1982 FORECAST		
REMOTE COMPUTING SERVICES								
FUNCTION SPECIFIC	21	22	5	35	35	-1	9	9
INDUSTRY SPECIFIC	10	11	10	17	16	-9	10	8
UTILITY MARKET	24	25	4	35	32	-10	7	5
SUBTOTAL	55	58	5	86	83	-4	8	7
PROCESSING FACILITIES MANAGEMENT								
FUNCTION SPECIFIC	0	0	0	0	0	0	0	0
INDUSTRY SPECIFIC	20	18	-10	70	38	-83	25	14
UTILITY MARKET	0	0	0	0	0	0	0	0
SUBTOTAL	20	18	-10	70	38	-83	25	14
BATCH PROCESSING SERVICES								
FUNCTION SPECIFIC	18	19	6	26	24	-9	7	4
INDUSTRY SPECIFIC	27	30	11	42	39	-7	8	5
UTILITY MARKET	15	16	7	15	18	14	0	3
SUBTOTAL	60	65	8	84	81	-3	6	4
TOTAL PROCESSING SERVICES								
FUNCTION SPECIFIC	39	41	5	61	59	-4	8	7
INDUSTRY SPECIFIC	57	59	4	125	93	-34	15	9
UTILITY MARKET	39	41	5	49	50	1	4	4
SUBTOTAL	135	141	4	243	202	-20	11	7
SOFTWARE PRODUCTS								
SYSTEMS SOFTWARE	38	40	5	110	121	9	19	21
APPLICATIONS SOFTWARE	30	37	23	75	132	43	15	24
SUBTOTAL	68	77	13	183	253	28	17	23
PROFESSIONAL SERVICES				0				
EDUCATION SERVICES	NA	0	NA	NA	0	NA	NA	0
CONSULTING SERVICES	NA	12	NA	NA	22	NA	NA	14
PROGRAMMING & ANALYSIS	88	79	-10	258	150	-72	21	13
FACILITIES MANAGEMENT	0	0	0	0	0	0	0	0
SUBTOTAL	88	91	3	258	172	-50	21	13
GRAND TOTAL	291	309	6	697	627	-11	16	14

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EXHIBIT C-10

RETAIL DISTRIBUTION SECTOR - DATABASE RECONCILIATION
OF MARKET FORECAST, BY DELIVERY MODE
($ millions)

DELIVERY MODE	USER EXPENDITURES						AAGR FORECAST IN '81 REPORT	AAGR FORECAST IN '82 REPORT
	1981 FORECAST OF '81 MARKET	1982 REPORT OF '81 MARKET	DIFFERENCE AS % OF 1981 MARKET	1981 FORECAST OF '87 MARKET	1982 FORECAST OF '87 MARKET	DIFFERENCE AS % OF 1982 FORECAST		
REMOTE COMPUTING SERVICES								
FUNCTION SPECIFIC	46	47	2	167	125	-34	25	19
INDUSTRY SPECIFIC	358	362	1	991	822	-21	19	16
UTILITY MARKET	38	40	5	102	73	-39	19	12
SUBTOTAL	442	449	2	1276	1020	-25	20	16
PROCESSING FACILITIES MANAGEMENT								
FUNCTION SPECIFIC	0	0	0	0	0	0	0	0
INDUSTRY SPECIFIC	15	13	-13	41	18	-129	21	6
UTILITY MARKET	0	0	0	0	0	0	0	0
SUBTOTAL	15	13	-13	40	18	-120	20	6
BATCH PROCESSING SERVICES								
FUNCTION SPECIFIC	76	86	13	161	153	-5	14	10
INDUSTRY SPECIFIC	101	114	13	115	138	17	2	3
UTILITY MARKET	30	34	13	32	43	27	0	5
SUBTOTAL	207	234	13	308	334	8	7	6
TOTAL PROCESSING SERVICES								
FUNCTION SPECIFIC	122	133	9	329	278	-18	19	13
INDUSTRY SPECIFIC	474	489	3	1125	978	-15	16	13
UTILITY MARKET	68	74	9	131	116	-13	12	9
SUBTOTAL	664	696	5	1576	1371	-15	16	13
SOFTWARE PRODUCTS								
SYSTEMS SOFTWARE	70	71	1	501	382	-31	40	33
APPLICATIONS SOFTWARE	97	135	39	605	935	35	35	39
SUBTOTAL	167	206	23	1104	1317	16	37	37
PROFESSIONAL SERVICES								
EDUCATION SERVICES	NA	7	NA	NA	15	NA	NA	16
CONSULTING SERVICES	NA	18	NA	NA	42	NA	NA	16
PROGRAMMING & ANALYSIS	133	117	-12	575	217	-165	31	12
FACILITIES MANAGEMENT	0	0	0	0	0	0	0	0
SUBTOTAL	133	142	7	580	274	-112	31	13
GRAND TOTAL	964	1044	8	3257	2962	-10	23	20

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EXHIBIT C-11

WHOLESALE DISTRIBUTION SECTOR - DATABASE RECONCILIATION
OF MARKET FORECAST, BY DELIVERY MODE
($ millions)

DELIVERY MODE	USER EXPENDITURES						AAGR FORECAST IN '81 REPORT	AAGR FORECAST IN '82 REPORT
	1981 FORECAST OF '81 MARKET	1982 REPORT OF '81 MARKET	DIFFERENCE AS % OF 1981 MARKET	1981 FORECAST OF '87 MARKET	1982 FORECAST OF '87 MARKET	DIFFERENCE AS % OF 1982 FORECAST		
REMOTE COMPUTING SERVICES								
FUNCTION SPECIFIC	63	65	3	153	119	-29	17	11
INDUSTRY SPECIFIC	115	118	3	326	258	-26	20	14
UTILITY MARKET	27	27	0	61	39	-56	16	7
SUBTOTAL	205	210	2	553	416	-33	19	13
PROCESSING FACILITIES MANAGEMENT								
FUNCTION SPECIFIC	0	0	0	0	0	0	0	0
INDUSTRY SPECIFIC	35	32	-9	109	56	-95	23	11
UTILITY MARKET	5	4	-20	12	7	-72	17	10
SUBTOTAL	40	36	-10	120	63	-90	22	11
BATCH PROCESSING SERVICES								
FUNCTION SPECIFIC	133	149	12	297	296	0	15	11
INDUSTRY SPECIFIC	58	65	12	63	79	21	1	3
UTILITY MARKET	98	112	14	114	105	-8	3	0
SUBTOTAL	289	326	13	476	480	1	9	7
TOTAL PROCESSING SERVICES								
FUNCTION SPECIFIC	196	214	9	872	415	-110	32	11
INDUSTRY SPECIFIC	208	215	3	506	393	-29	17	11
UTILITY MARKET	130	143	10	186	151	-23	7	2
SUBTOTAL	534	572	7	1121	959	-17	14	9
SOFTWARE PRODUCTS								
SYSTEMS SOFTWARE	64	66	3	535	389	-38	44	35
APPLICATIONS SOFTWARE	151	205	36	977	1512	35	36	39
SUBTOTAL	215	271	26	1540	1901	19	39	38
PROFESSIONAL SERVICES								
EDUCATION SERVICES	NA	7	NA	NA	13	NA	NA	13
CONSULTING SERVICES	NA	12	NA	NA	27	NA	NA	14
PROGRAMMING & ANALYSIS	107	95	-11	471	196	-140	31	14
FACILITIES MANAGEMENT	2	2	0	6	4	-44	21	11
SUBTOTAL	109	116	6	479	240	-100	31	14
GRAND TOTAL	858	959	12	3094	3100	0	24	23

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EXHIBIT C-12

FEDERAL GOVERNMENT SECTOR - DATABASE RECONCILIATION
OF MARKET FORECAST, BY DELIVERY MODE
($ millions)

DELIVERY MODE	USER EXPENDITURES						AAGR FORECAST IN '81 REPORT	AAGR FORECAST IN '82 REPORT
	1981 FORECAST OF '81 MARKET	1982 REPORT OF '81 MARKET	DIFFERENCE AS % OF 1981 MARKET	1981 FORECAST OF '87 MARKET	1982 FORECAST OF '87 MARKET	DIFFERENCE AS % OF 1982 FORECAST		
REMOTE COMPUTING SERVICES								
FUNCTION SPECIFIC	116	119	3	273	228	-20	15	12
INDUSTRY SPECIFIC	35	37	6	104	82	-27	21	15
UTILITY MARKET	273	278	2	636	491	-30	16	11
SUBTOTAL	424	434	2	997	801	-25	16	12
PROCESSING FACILITIES MANAGEMENT								
FUNCTION SPECIFIC	40	38	-5	75	56	-35	12	7
INDUSTRY SPECIFIC	0	0	0	0	0	0	0	0
UTILITY MARKET	47	42	-11	173	247	30	23	31
SUBTOTAL	87	80	-8	247	303	19	18	24
BATCH PROCESSING SERVICES								
FUNCTION SPECIFIC	10	12	20	12	17	29	3	6
INDUSTRY SPECIFIC	0	0	0	0	0	0	0	0
UTILITY MARKET	47	53	13	49	68	27	0	5
SUBTOTAL	57	65	14	63	85	26	1	5
TOTAL PROCESSING SERVICES								
FUNCTION SPECIFIC	166	169	2	355	301	-18	14	11
INDUSTRY SPECIFIC	35	37	6	104	82	-27	21	15
UTILITY MARKET	367	373	2	842	806	-4	15	14
SUBTOTAL	568	579	2	1348	1189	-13	16	13
SOFTWARE PRODUCTS								
SYSTEMS SOFTWARE	323	331	2	1941	1786	-9	35	34
APPLICATIONS SOFTWARE	11	14	27	33	54	40	19	24
SUBTOTAL	334	345	3	1992	1840	-8	35	33
PROFESSIONAL SERVICES								
EDUCATION SERVICES	NA	68	NA	NA	264	NA	NA	28
CONSULTING SERVICES	NA	145	NA	NA	336	NA	NA	16
PROGRAMMING & ANALYSIS	1120	928	-17	5099	2434	-109	31	18
FACILITIES MANAGEMENT	339	337	-1	595	544	-9	10	9
SUBTOTAL	1459	1478	1	5592	3578	-56	27	16
GRAND TOTAL	2361	2402	2	8923	6607	-35	26	19

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EXHIBIT C-13

STATE AND LOCAL GOVERNMENT SECTOR - DATABASE RECONCILIATION
OF MARKET FORECAST, BY DELIVERY MODE
($ millions)

DELIVERY MODE	USER EXPENDITURES						AAGR FORECAST IN '81 REPORT	AAGR FORECAST IN '82 REPORT
	1981 FORECAST OF '81 MARKET	1982 REPORT OF '81 MARKET	DIFFERENCE AS % OF 1981 MARKET	1981 FORECAST OF '87 MARKET	1982 FORECAST OF '87 MARKET	DIFFERENCE AS % OF 1982 FORECAST		
REMOTE COMPUTING SERVICES								
FUNCTION SPECIFIC	25	25	0	75	57	-31	21	15
INDUSTRY SPECIFIC	12	13	8	39	26	-52	24	12
UTILITY MARKET	37	38	3	94	53	-78	19	7
SUBTOTAL	74	76	3	213	136	-57	21	11
PROCESSING FACILITIES MANAGEMENT								
FUNCTION SPECIFIC	0	0	0	0	0	0	0	0
INDUSTRY SPECIFIC	10	9	-10	40	15	-164	29	11
UTILITY MARKET	23	20	-13	51	35	-45	15	19
SUBTOTAL	33	29	-12	95	50	-90	21	11
BATCH PROCESSING SERVICES								
FUNCTION SPECIFIC	18	20	11	29	31	8	8	8
INDUSTRY SPECIFIC	21	24	14	39	39	1	11	9
UTILITY MARKET	42	51	21	51	82	38	2	9
SUBTOTAL	81	95	17	118	152	22	6	9
TOTAL PROCESSING SERVICES								
FUNCTION SPECIFIC	43	45	5	106	88	-20	17	12
INDUSTRY SPECIFIC	43	46	7	118	80	-47	20	10
UTILITY MARKET	102	109	7	194	170	-14	12	8
SUBTOTAL	188	200	6	416	338	-23	15	10
SOFTWARE PRODUCTS								
SYSTEMS SOFTWARE	106	110	4	391	337	-16	25	21
APPLICATIONS SOFTWARE	30	37	23	86	130	34	18	25
SUBTOTAL	136	147	8	436	467	-4	24	22
PROFESSIONAL SERVICES								
EDUCATION SERVICES	NA	47	NA	NA	120	NA	NA	18
CONSULTING SERVICES	NA	109	NA	NA	230	NA	NA	15
PROGRAMMING & ANALYSIS	949	786	-17	3797	1451	-162	29	12
FACILITIES MANAGEMENT	7	7	0	18	16	-14	18	14
SUBTOTAL	956	949	-1	3859	1817	-112	29	13
GRAND TOTAL	1280	1296	1	4821	2622	-84	27	14

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EXHIBIT C-14

SERVICES SECTOR - DATABASE RECONCILIATION
OF MARKET FORECAST, BY DELIVERY MODE
($ millions)

DELIVERY MODE	USER EXPENDITURES						AAGR FORECAST IN '81 REPORT	AAGR FORECAST IN '82 REPORT
	1981 FORECAST OF '81 MARKET	1982 REPORT OF '81 MARKET	DIFFERENCE AS % OF 1981 MARKET	1981 FORECAST OF '87 MARKET	1982 FORECAST OF '87 MARKET	DIFFERENCE AS % OF 1982 FORECAST		
REMOTE COMPUTING SERVICES								
FUNCTION SPECIFIC	145	148	2	318	311	-2	14	14
INDUSTRY SPECIFIC	375	377	1	1297	972	-33	24	18
UTILITY MARKET	71	70	-1	224	131	-71	23	12
SUBTOTAL	591	595	1	1853	1414	-31	22	16
PROCESSING FACILITIES MANAGEMENT								
FUNCTION SPECIFIC	0	0	0	0	0	0	0	0
INDUSTRY SPECIFIC	5	4	-20	17	7	-142	25	11
UTILITY MARKET	0	0	0	0	0	0	0	0
SUBTOTAL	5	4	-20	17	7	-142	25	11
BATCH PROCESSING SERVICES								
FUNCTION SPECIFIC	74	84	14	195	143	-29	18	9
INDUSTRY SPECIFIC	182	208	14	235	302	22	4	6
UTILITY MARKET	20	21	5	21	25	17	0	4
SUBTOTAL	276	313	13	434	470	8	8	7
TOTAL PROCESSING SERVICES								
FUNCTION SPECIFIC	219	232	6	493	454	-9	15	12
INDUSTRY SPECIFIC	562	589	5	1529	1281	-19	19	14
UTILITY MARKET	91	91	0	239	156	-53	19	10
SUBTOTAL	872	912	5	2254	1891	-19	18	13
SOFTWARE PRODUCTS								
SYSTEMS SOFTWARE	41	42	2	263	224	-17	37	33
APPLICATIONS SOFTWARE	69	95	38	327	641	49	28	38
SUBTOTAL	110	137	25	581	865	33	31	37
PROFESSIONAL SERVICES								
EDUCATION SERVICES	NA	0	NA	NA	0	NA	NA	0
CONSULTING SERVICES	NA	6	NA	NA	14	NA	NA	16
PROGRAMMING & ANALYSIS	28	25	-11	115	55	-109	29	15
FACILITIES MANAGEMENT	0	0	0	0	0	0	0	0
SUBTOTAL	28	31	11	115	69	-67	29	15
GRAND TOTAL	1010	1090	7	2966	2825	-5	20	18

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EXHIBIT C-15

OTHER SECTOR - DATABASE RECONCILIATION
OF MARKET FORECAST, BY DELIVERY MODE
($ millions)

| DELIVERY MODE | USER EXPENDITURES | | | | | | AAGR FORECAST IN '81 REPORT | AAGR FORECAST IN '82 REPORT |
	1981 FORECAST OF '81 MARKET	1982 REPORT OF '81 MARKET	DIFFERENCE AS % OF 1981 MARKET	1981 FORECAST OF '87 MARKET	1982 FORECAST OF '87 MARKET	DIFFERENCE AS % OF 1982 FORECAST		
REMOTE COMPUTING SERVICES								
FUNCTION SPECIFIC	52	54	4	130	110	-18	17	14
INDUSTRY SPECIFIC	210	218	4	617	574	-7	20	18
UTILITY MARKET	76	77	1	199	127	-57	19	10
SUBTOTAL	338	349	3	936	811	-15	19	16
PROCESSING FACILITIES MANAGEMENT								
FUNCTION SPECIFIC	0	0	0	0	0	0	0	0
INDUSTRY SPECIFIC	9	8	-11	24	14	-69	19	10
UTILITY MARKET	5	4	-20	13	8	-59	18	11
SUBTOTAL	14	12	-14	37	22	-67	19	10
BATCH PROCESSING SERVICES								
FUNCTION SPECIFIC	109	123	13	233	222	-5	14	11
INDUSTRY SPECIFIC	129	144	12	192	191	00	7	6
UTILITY MARKET	22	25	14	26	34	25	2	5
SUBTOTAL	260	292	12	452	447	-1	10	8
TOTAL PROCESSING SERVICES								
FUNCTION SPECIFIC	161	177	10	363	332	-9	15	12
INDUSTRY SPECIFIC	348	370	6	833	779	-7	16	14
UTILITY MARKET	103	106	3	236	169	-40	16	9
SUBTOTAL	612	653	7	1453	1280	-13	16	13
SOFTWARE PRODUCTS								
SYSTEMS SOFTWARE	37	38	3	340	219	-55	47	34
APPLICATIONS SOFTWARE	68	86	26	399	616	35	33	41
SUBTOTAL	105	124	18	730	835	13	38	39
PROFESSIONAL SERVICES								
EDUCATION SERVICES	NA	7	NA	NA	18	NA	NA	17
CONSULTING SERVICES	NA	18	NA	NA	42	NA	NA	16
PROGRAMMING & ANALYSIS	151	134	-11	628	247	-154	30	12
FACILITIES MANAGEMENT	0	0	0	0	0	0	0	0
SUBTOTAL	151	159	5	634	307	-106	30	13
GRAND TOTAL	868	936	8	2792	2422	-15	22	19

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- The 1981 market for remote computing services was almost identical to INPUT's forecast, but growth rates in a number of markets have been reduced. This is because the inflation rate assumed is down from 10% per annum for the forecast period, to 6%.

- The two industry sectors impacted the most are discrete manufacturing in remote computing industry specific services (growth down to 17% from 25%) and process manufacturing in function specific services (growth down to 20% from 32%). (See Exhibits C-1 and C-2.)

- Similarly there was very little difference between INPUT's earlier forecast of the 1981 processing FM market and its actual size (within 1%). However, the growth of the utility FM market has been adjusted to account for the award of project VIABLE. This same segment could grow much faster if similar contracts are awarded.

- Applications software grew at a far faster rate than INPUT forecast in 1981. Also software industry specific research uncovered many companies hitherto unknown. The systems software forecast was virtually unchanged.

- The size of the 1981 batch services market was underestimated last year. Two factors contributed to this:

  - The overall market growth had been estimated at 8% above 1980 (whereas it grew 15%).

  - Several industry sector markets were underestimated.

- In the function specific batch market, discrete manufacturing, process manufacturing, and banking were underestimated by 15% to 16%.

- In the industry specific batch market, the process manufacturing sector has been increased by 14% (greater activity in seismic processing than anticipated)

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and banking by 16% (underestimated). Also note that the growth for banking is now expected to be slightly stronger (7% AAGR through 1987 rather than 4%).

- The utility batch market is relatively small but the 1981 growth has also been increased slightly.

- The professional services market has been slightly increased due to two relatively small markets that were added in 1982: education services and consulting services. The forecast to 1987 has been sharply reduced (by 11% per annum) due to the impact of the severe economic downturn already visible in 1982 and continuing through 1984. Companies are not spending as much for new, custom developed applications. Also in this area the reduction of the forecast inflation rate has the most direct impact.

- The total market growth and forecast size is virtually unchanged for 1987 (23% AAGR versus 24%). The total market size has been reduced by 4%.

- Finally, the 1982 report (Appendix B - Data Base) covers integrated systems for the first time. None of these revenues were included in 1981.

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APPENDIX D: INFORMATION SERVICES INDUSTRY
PERFORMANCE, 1970-1987

APPENDIX D: INFORMATION SERVICES INDUSTRY PERFORMANCE, 1970-1987

- Clients have requested a historical perspective as well as a forecast of the information services industry. This section has been prepared in response to these requests.

- The historical perspectives have been produced using the following methodology:

    - 1982 data have been reconciled with INPUT's first 1976 market assessment, then extrapolated from 1976 back to 1970.

    - Data for each year have been made compatible with current definitions of information services type and mode of delivery.

    - Each year's data have been adjusted backwards based on:

        . Knowledge of the information services industry market today.

        . Knowledge of previous years' markets.

- In 1976, INPUT first estimated a base of $5.4 billion for the computer services industry; this was subsequently adjusted from additional research and market definition changes to a base of $7.6 billion.   The five-year growth rate originally forecasted was 16% per year through 1981, compared to a four-year

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experienced growth rate of 19%. This difference is explained largely by inflation rate differences.

- INPUT assumed an inflation rate of 5% to 7% for the 1975-1981 forecast.

- The actual inflation rate was in the range of 8% to 10% for that period.

- This shows that INPUT's long-range forecast of the information services industry was reasonably accurate.

- The inflation rate of 6% for the current forecast is very important since the forecast is in current dollars.

- Major changes in the inflation rate and other economic conditions will be reflected in major changes in the rate of growth of the information services industry.

- In any event, the industry will continue to enjoy significant real growth over the next five years.

- The historical and forecast data are presented in several formats in Exhibits D-1 through D-3.

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EXHIBIT D-1

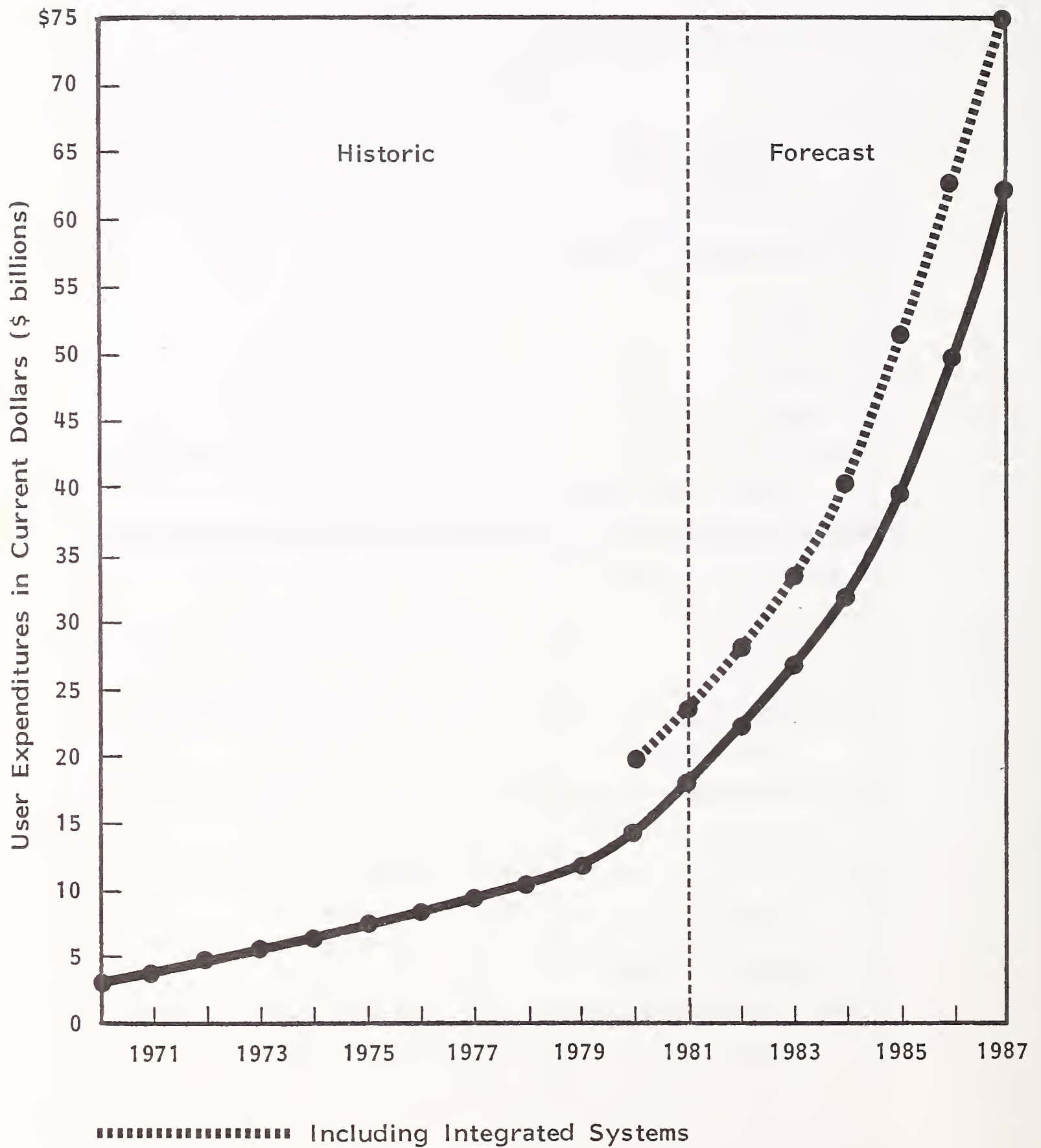## INFORMATION SERVICES INDUSTRY
PERFORMANCE SUMMARY,
1970-1982

INFORMATION SERVICE	INFORMATION SERVICES MARKET		
	1970 ($ millions)	1982 ($ millions)	1970-1982 AAGR (percent)
Processing Services			
RCS	$ 540	$ 5,683	22%
Batch	1,060	4,188	12
FM	390	1,537	12
Total Processing	$1,990	$11,408	16%
Software Products			
Systems	150	2,574	27
Applications	100	2,913	32
Total Software	$ 250	$ 5,487	29%
Professional Services	930	5,543	16
Subtotal	$3,170	$22,438	18%
Integrated Systems	*	3,481	N/A
Grand Total	N/A	$25,919	N/A

* Not Measured

N/A = Not Applicable

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EXHIBIT D-2

TOTAL INFORMATION SERVICES MARKET,
1970-1987

Including Integrated Systems

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EXHIBIT D-3

INFORMATION SERVICES INDUSTRY YEARLY PERFORMANCE AND FORECAST,*

1970-1987

($ millions)

INFORMATION SERVICE	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979
Processing Services										
RCS	$ 540	$ 670	$ 840	$1,030	$1,260	$1,560	$1,980	$2,390	$2,940	$3,528
Batch	1,060	1,170	1,290	1,410	1,560	1,710	1,880	2,020	2,300	2,486
FM	390	450	510	590	670	770	880	1,030	1,230	1,223
Software Products										
Systems	150	210	270	330	390	490	590	720	890	1,152
Applications	100	140	170	210	270	320	390	480	590	720
Professional Services	930	1,070	1,190	1,340	1,500	1,690	1,910	2,160	2,480	2,932
Subtotal**	$3,170	$3,710	$4,270	$4,910	$5,650	$6,540	$7,630	$8,800	$10,430	$12,041

* 1982-1987 Information Services Forecast

** Integrated Systems Not Included In This Table Prior to 1980

Continued

EXHIBIT D-3 (Cont.)

INFORMATION SERVICES INDUSTRY YEARLY PERFORMANCE AND FORECAST, *

1970-1987

($ millions)

INFORMATION SERVICE	1980	1981	1982	1983	1984	1985	1986	1987	AAGR 1970-1987 (percent)
Processing Services									
RCS	$ 4,126	$ 5,117	$ 5,683	$ 6,426	$ 7,441	$ 8,733	$10,393	$12,356	20%
Batch	3,091	3,829	4,188	4,645	5,124	5,617	6,102	6,572	11
FM	1,121	1,344	1,537	1,794	2,107	2,494	2,952	3,494	14
Software Products									
Systems	1,401	1,974	2,574	3,401	4,626	6,357	8,646	11,667	29
Applications	1,325	2,191	2,913	3,999	5,714	8,007	11,266	15,856	35
Professional Services	3,751	4,993	5,543	6,277	7,284	8,644	10,403	12,543	17
Subtotal	$14,815	$19,448	$22,438	$26,542	$32,296	$39,852	$49,762	$62,488	19
Integrated Systems	2,157	2,884	3,481	4,248	5,490	7,253	9,492	12,430	N/A
Grand Total	$16,972	$22,332	$25,919	$30,787	$37,786	$47,105	$59,254	$74,918	N/A

* 1982-1987 Information Services Forecast   N/A = Not Applicable

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APPENDIX E: RELATED INPUT REPORTS

APPENDIX E: RELATED INPUT REPORTS

1976-1982 INFORMATION SERVICES INDUSTRY
PROGRAM (ISIP)

ANNUAL REPORTS

		Year
●	U.S. Information Services Markets, 1982-1987 (Annual Report)	
	Vol. 1 - Processing Services and Integrated Systems	1982
	Vol. 2 - Software Products and Professional Services	1982
●	ISIP 1981 Annual Report	1981
●	ISIP 1980 Annual Report	1980
●	ISIP 1979 Annual Report	1979
●	ISIP 1978 Annual Report	1978
●	ISIP 1977 Annual Report	1977
●	ISIP 1976 Annual Report	1976

1982 REPORTS

- Personal Computer Software Opportunities

- New Processing Opportunities in Banking

- Market Opportunities in Discrete Manufacturing

- Market Opportunities in Network Services

- Directory of Leading U.S. Computer Services Vendors

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1981 REPORTS
MARKET STUDIES

- Opportunities for Business Graphics Services and Software
- The Merging of Hardware, Software, and Services
- Computer Services Opportunities in Energy Markets
- Impact of Communications Developments on Information Services Vendors
- Market Trends in Professional Services
- Personal Computer Use in Large Companies

MANAGEMENT BRIEFS

- Information Services in 1990
- Banking and Finance Industry Trends: Impact on Computer Services
- Directory of Leading U.S. Computer Services Firms
- Information Services Industry Opportunities in Hardware Services

1980 REPORTS

- Computer Services Markets For Insurance Agents and Brokers
- Market Opportunities for Data Base Services
- Marketing Applications Software Products
- Trends in Computer Services Pricing
- Trends in Delivery of Remote Computing Services
- Improving Sales Productivity in the Computer Services Industry

1979 REPORTS

- Sales and Sales Support Training
- Computer Services Market in Banking and Finance
- Opportunities in Education Services
- Opportunities in Marketing Systems Software Products
- Computer Services Markets in Government Funded Health Insurance

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- Office of the Future: Opportunities for Service Companies
- Turnkey Systems Opportunities, 1979-1984

1978 REPORTS

- Acquisition Strategies for Computer Services Companies
- Financial Management and Planning Services and Software Markets
- Opportunities in User Site Hardware Services
- Distributed Data Processing Systems: Applications, Performance, and Architecture
- Trends in Services and Software Pricing
- Computer Services Markets in Hospitals
- Data Base Management Systems Software Markets
- Remote Computing Services Markets in Europe
- Computer Services in Federal Government Energy Programs

1977 REPORTS

- Computer Services Markets in Correspondent Banking
- Small Business Computers: Their Impact on Processing Services
- Plug Compatible Mainframes: The New Hardware Economics
- Impact of Marketing Compensation Plans in the Computer Services Industry
- Computer Services Markets in the Savings and Loan Industry
- Computer Services Markets in the Wholesale Industry - Petroleum, Petrochemical, Food, and Electrical/Electronic
- Computer Services Markets in the Discrete Manufacturing Industry
- Opportunities for Investment in the Computer Services Industry
- Remote Computing Services Markets Based on Data Base Management Systems

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1976 REPORTS

- EDP Plans and Budgets for 1977

- Computer Services Markets in the Services Industries. Part I - Accountants, Lawyers, Consultants

- Computer Services Markets in the Services Industries. Part II - Architects, Engineers, Research and Development Organizations

- Remote Computing Services Markets for Economic and Financial Data Bases

- Computer Services Markets in the Food Processing Industry

INDUSTRY SURVEYS

- Sixteenth Annual ADAPSO Survey of the Computer
  Services Industry - 1982   7/82

- Fifteenth Annual ADAPSO Survey of the Computer
  Services Industry - 1981   7/81

- Fourteenth Annual ADAPSO Survey of the Computer
  Services Industry - 1980   7/80

- Thirteenth Annual ADAPSO Survey of the Computer
  Services Industry - 1979   7/79

- Twelfth Annual ADAPSO Survey of the Computer
  Services Industry - 1978   7/78

1982 MULTICLIENT STUDIES

- Opportunities in Financial Planning Systems Markets: 1982-1987   12/82
- Computer Output Services Markets, 1981-1986   3/82

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1981 MULTICLIENT STUDIES

- Improving the Productivity of Engineering and Manufacturing
  Using CAD/CAM   12/81
- Western European Opportunities for On-Line Data Base
  Services   6/81

1980 MULTICLIENT STUDIES

- Strategies for Competing in the IBM Compatible Marketplace   2/80
- Selling Personal Computers to Large Companies   10/80
- Productivity Improvement, 1980-1983   12/80
- Opportunities in Digital Communications Services
  Market Information: A Study of User Networks and Needs   11/80

OTHER INPUT SUBSCRIPTION PROGRAMS

- Company Analysis and Monitoring Program (CAMP) for the Information
  Services Industry
- Field Service Program (FSP)
- Management Planning Program in Information Systems (ISP)
- Residual Value Forecasting Program
- Technology and Management Issues Program

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